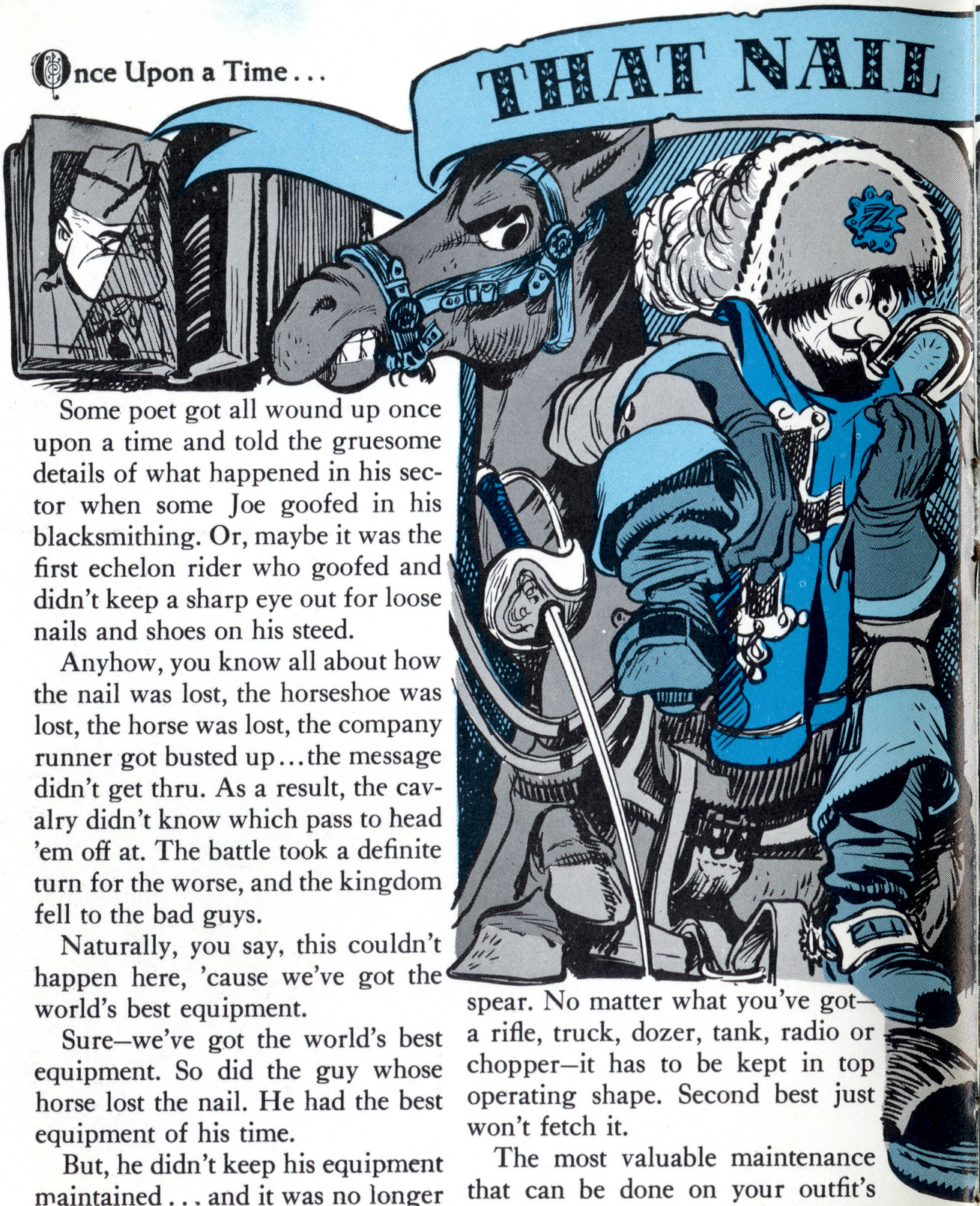
Issue 107
PS
1961 Se
THE PREVENTIVE MAINTENANCE MONTHLY
I DON'T CARE IF IT IS GONNA RAIN FOR WEEKS ... NOTHIN'S COMIN' ABOARD 'TILL I CHECK THE TM ON OUR CAPACITY!
Will Eisner
SPECIAL FEATURE
Introducing
YOUR M113 APC
(SEE PAGE 2)

Once Upon a Time . . .

# THAT NAIL



Some poet got all wound up once upon a time and told the gruesome details of what happened in his sector when some Joe goofed in his blacksmithing. Or, maybe it was the first echelon rider who goofed and didn't keep a sharp eye out for loose nails and shoes on his steed.

Anyhow, you know all about how the nail was lost, the horseshoe was lost, the horse was lost, the company runner got busted up . . . the message didn't get thru. As a result, the cavalry didn't know which pass to head 'em off at. The battle took a definite turn for the worse, and the kingdom fell to the bad guys.

Naturally, you say, this couldn't happen here, 'cause we've got the world's best equipment.

Sure—we've got the world's best equipment. So did the guy whose horse lost the nail. He had the best equipment of his time.

But, he didn't keep his equipment maintained . . . and it was no longer the best.

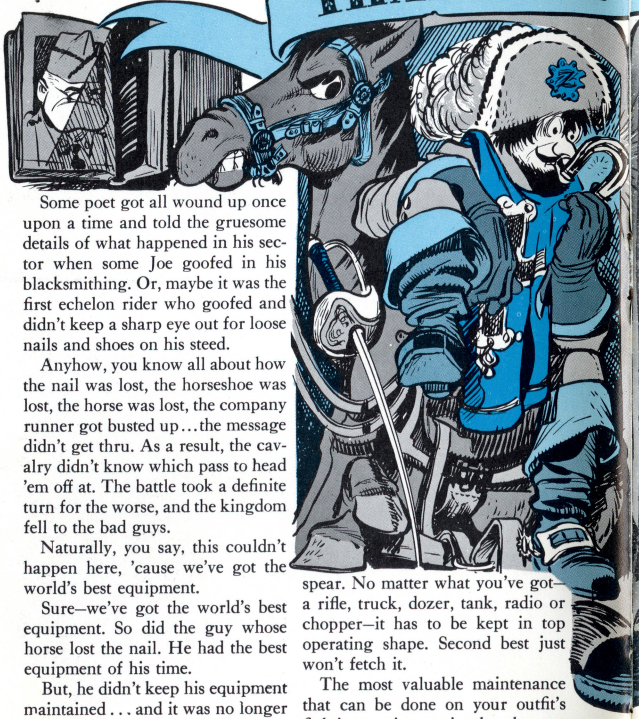
Same today, even more so. Because our equipment is far more complicated than a horse, a sword or spear. No matter what you've got—a rifle, truck, dozer, tank, radio or chopper—it has to be kept in top operating shape. Second best just won't fetch it.

The most valuable maintenance that can be done on your outfit's fighting equipment is what the user —gunner, driver, operator—does.

Operate it right – first and foremost. Then, you keep your eye, nose,

Once Upon a Time...

# THAT NAIL STORY



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The most valuable maintenance that can be done on your outfit's fighting equipment is what the user—gunner, driver, operator—does.

Operate it right – first and foremost. Then, you keep your eye, nose, ear and touch alert every minute you're with your equipment to note anything that's not perkin' right. You clean, adjust and lube. Then, when you spot something that you can't take care of, you tell your sergeant or your unit mechanic or armorer. They take it from there.

It's up to you to keep our equipment the world's best... and ready for combat.


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# MEET THE LUCKY PART 1

Some outfits have already got their new "Lucky 113's," the very latest thing in full tracked armored personnel carriers.

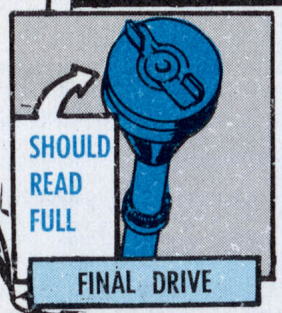
The M113 APC is a real wigglin' lady. It's light--only 18,600 pounds air-drop weight—and low to the ground—81 inches to the top of the antenna guard.

Its single V-8 engine turns up 215 HP at 4000 RPM, and its 80-gal fuel cell gives it an operating range of around 200 miles.

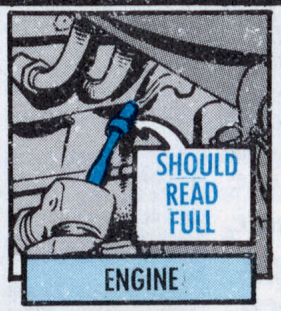
The dope on it is in TM 9-2300-224-10. Until you get your copy, this will give you some of the main points.

The M113 looks like a "compact" version of the M59 but it holds a driver, commander, and 11 passengers with all their gear, plus plenty of spare room for radios, rations and ammunition. The M113 will replace the M59 eventually.

## BEFORE OPERATIONS CHECK

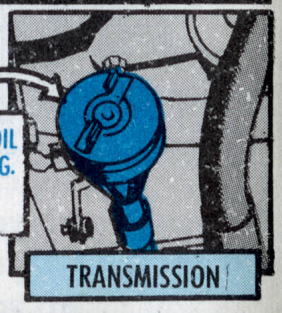


FINAL DRIVE



ENGINE

DIFFERENTIAL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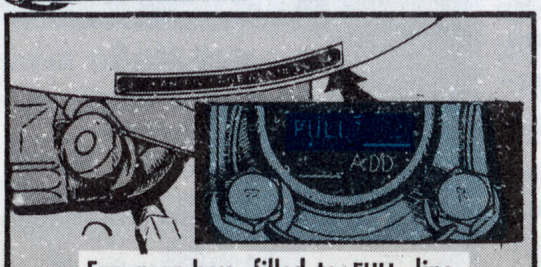
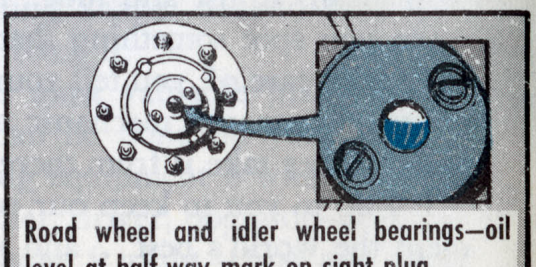
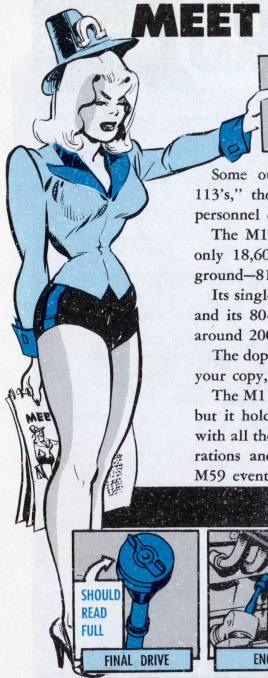


Fan gear box—filled to FULL line.


Road wheel and idler wheel bearings—oil level at half-way mark on sight plug.

# MEET THE LUCKY LADY-M113

## PART 1



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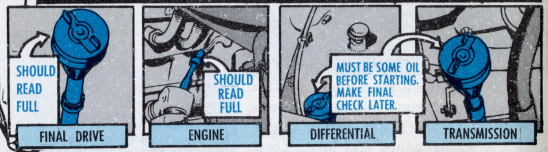


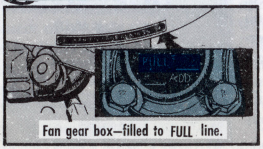


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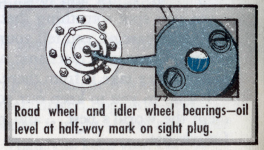
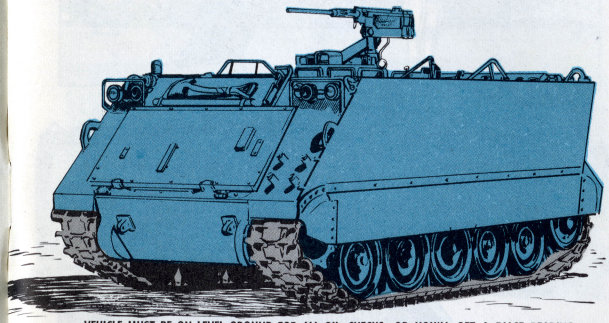
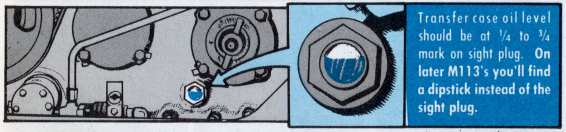


Road wheel and idler wheel bearings—oil level at half-way mark on sight plug.

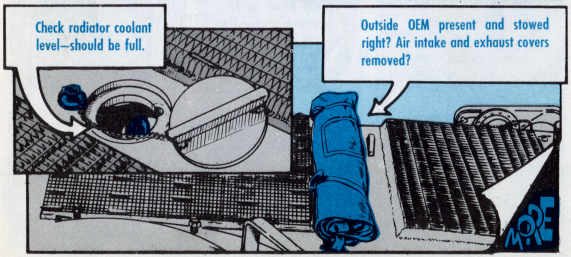




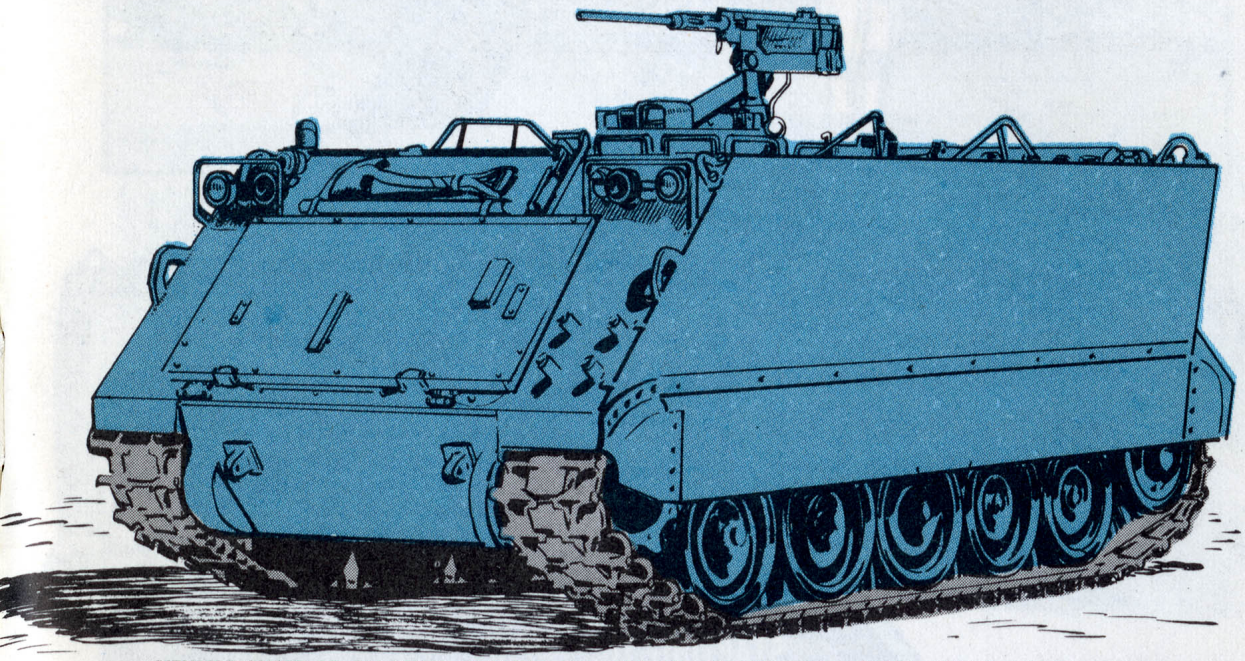
VEHICLE MUST BE ON LEVEL GROUND FOR ALL OIL CHECKS, OR YOU'LL GET A FALSE READING.



Transfer case oil level should be at ¼ to ¾ mark on sight plug. **On later M113's you'll find a dipstick instead of the sight plug.**



# LADY-M113



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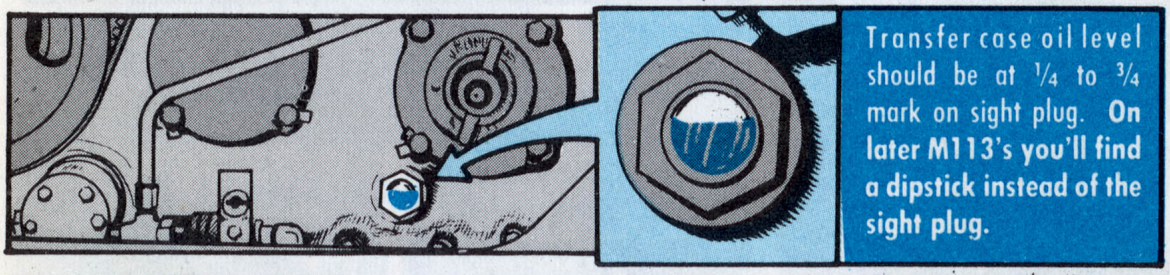
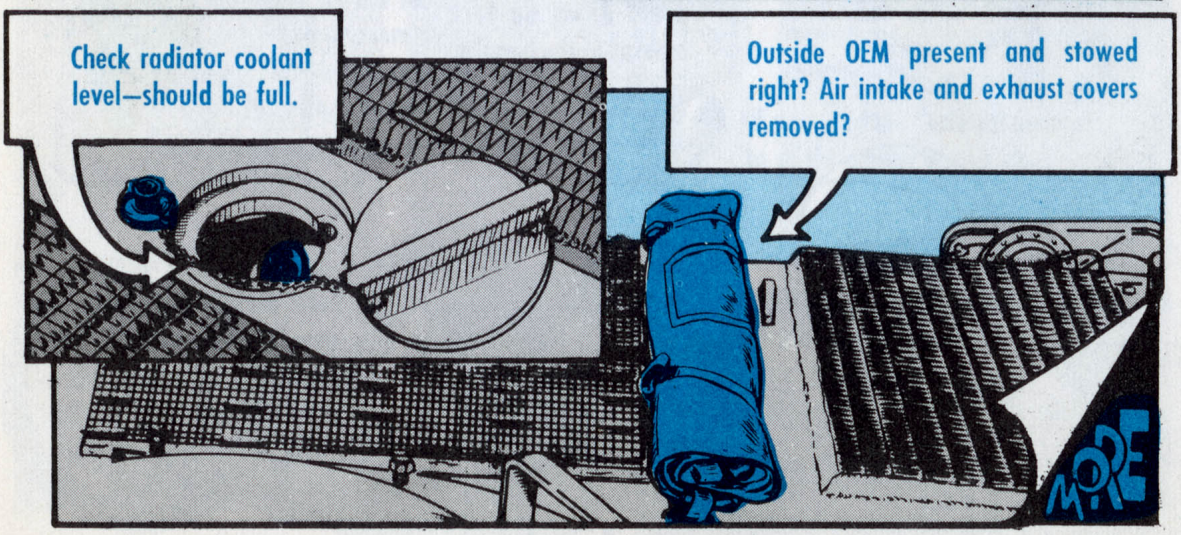
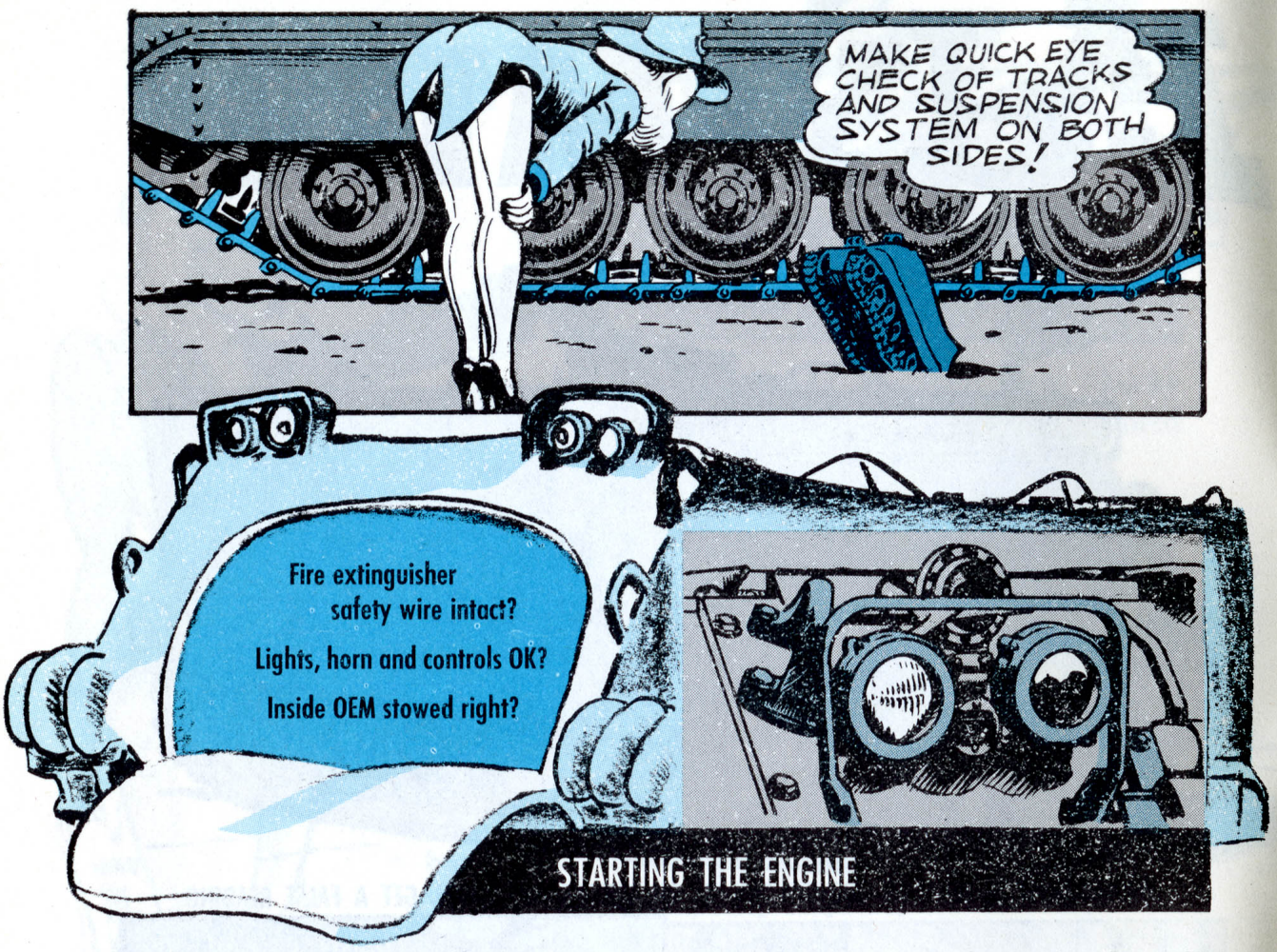


Transfer case oil level should be at 1/4 to 3/4 mark on sight plug. **On later M113's you'll find a dipstick instead of the sight plug.**

Check radiator coolant level—should be full.

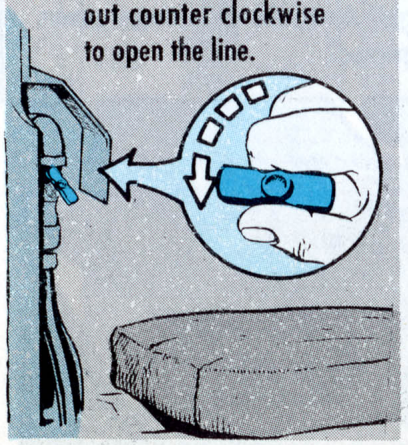
Outside OEM present and stowed right? Air intake and exhaust covers removed?



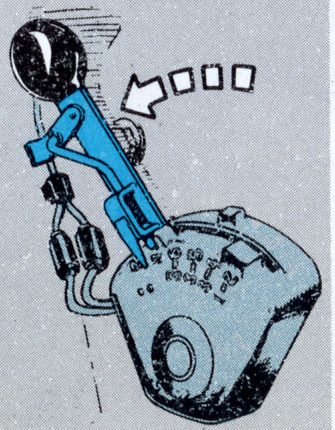



## STARTING THE ENGINE

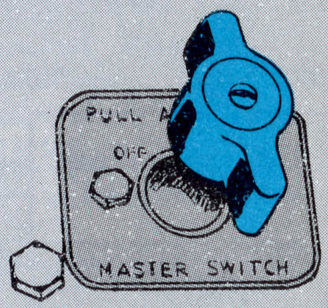
1. Before starting the engine, turn off all radios and turn on the fuel shutoff valve. The valve is near the lower rear corner of the fuel cell and you screw it out counter clockwise to open the line.



2. Shift to NEUTRAL and make sure brakes are ON. To set brakes, pull back equally on both steering levers, then press down on lock buttons in the handles.

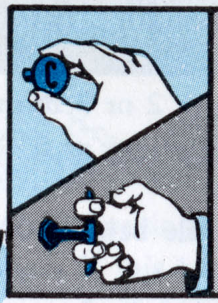


3. Master switch . . . ON.

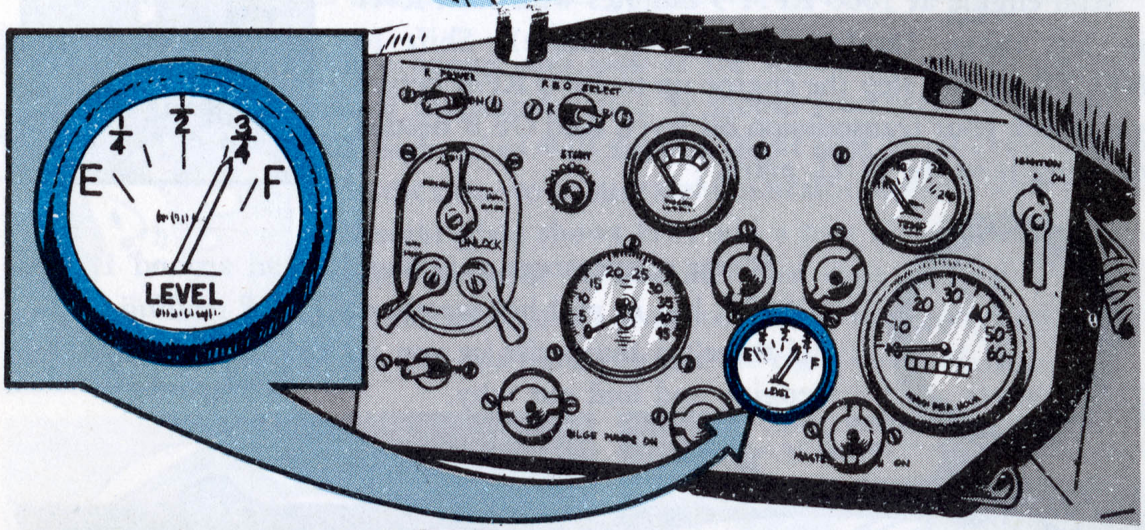


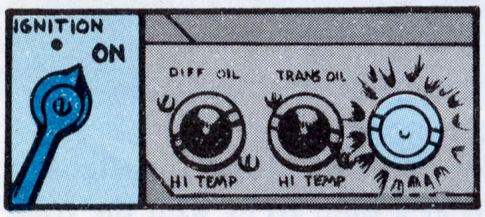

Early M113's have it on a panel over the driver's left shoulder. Late models have it on the left wall of the driver's compartment below the instrument panel.

4. EYEBALL THE FUEL GAGE AND SEE IF IT SHOWS ENOUGH IN THE TANK. WITH THE IGNITION SWITCH OFF, PRESS THE STARTER SWITCH 3 OR 4 SECONDS TO CHECK FOR HYDROSTATIC LOCK.

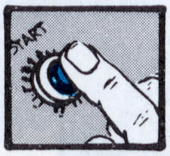


5. Next, pull the hand throttle out about 1/2 inch. In cold weather you'll also need to pull out the choke.




6. Flip the ignition switch to ON. The ENGINE OIL red warning light should go on but the differential and transmission warning lights should stay off. If they come on, locate the trouble before you go ahead.



7. Press starter switch, but don't crank the engine more than 15 seconds at a time. If it doesn't catch the first time, wait 30 seconds before trying again.

Within 10 seconds after the engine starts, the engine warning light should go out. If it doesn't, turn off the engine and get your company mechanic quick.

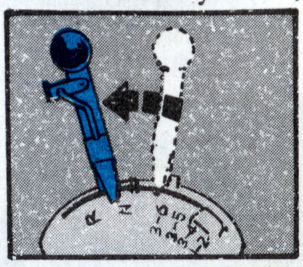
If you used the choke, push it back in as the engine warms up.

Battery-generator needle should stay in the yellow or green zone. At high engine RPM the needle should always be in the green zone. If it doesn't move out of the red zone, stop the engine and get your mechanic to find out why.

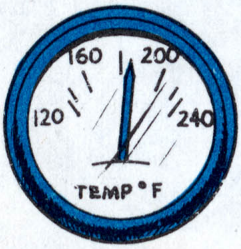
## WARM UP PERIOD

After the engine has run 2 or 3 minutes, have your buddy check the differential. Do it with engine idling at 650-700 RPM. If level is at or below ADD mark, fill to FULL mark.

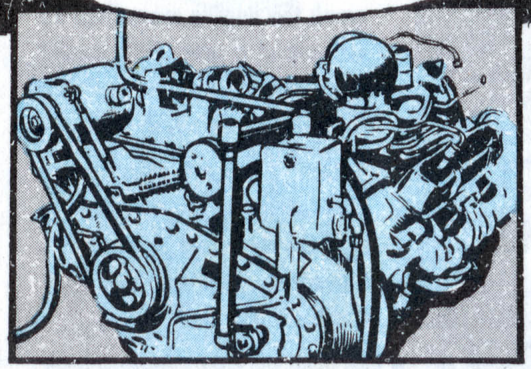
Don't let your M113 idle below 1000 RPM for long periods. When you do, the plugs foul up fast.



Run engine at 1000 RPM 5 minutes with shift lever in 3-6 range (brakes locked, of course). Shift to NEUTRAL and step the engine up to 1500 RPM before you check your transmission oil level. Add OE if needed to bring it to the FULL mark.




Water temperature gage should read around 180°to 200°F, but in real hot weather a 230°F reading is OK. If there's a sharp rise or you go above 230°F, stop the engine and find out why.



Sometimes if you gun the engine or run it at a high RPM with the transmission in neutral you might disengage the engine quick-disconnect clutch.

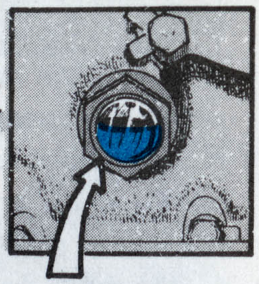
If this happens, stop the engine, take out the access panel next to the driver and engage the clutch again.

This clutch sometimes cuts-out because of vibration you get in running at a high RPM without engine load.

Late production models have a mechanical lock to keep the clutch on the job.

If clutch cut-out becomes a problem with your vehicle, you can wire the quick disconnect lever in place without damaging the transfer case, if there's a little slack in the linkage.

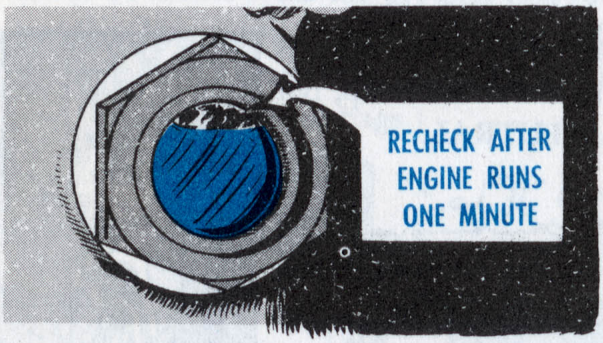
**BE CAREFUL: ON EARLY MODELS, GUNNING THE ENGINE OR RUNNING IT AT HIGH RPM WITH THE TRANSMISSION IN NEUTRAL IS DANGEROUS BECAUSE THE TRANSMISSION CAN SHIFT INTO A DRIVE RANGE ALL BY ITSELF.**



Reason for this is the throttle cross-shaft bearings sometimes bind. Have your support check them if this happens. This binding has been corrected on later production models.

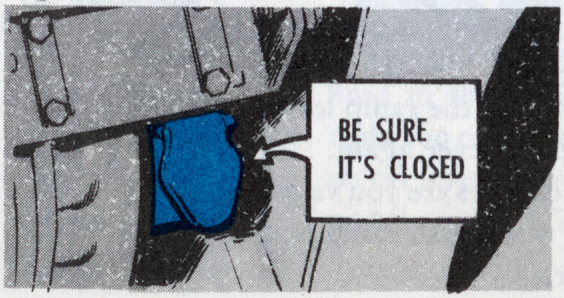
Stop engine and look at the sight indicator on the right rear of the transfer case. It should read between ¼ and ¾ full. Sight glass will show a slight sign of oil even with no oil in the case—so be sure sight indicator shows at least ¼ full.

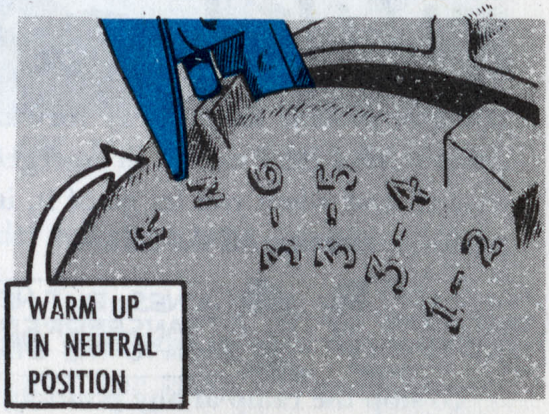
If sight glass shows low, add a pint of oil. Start and run engine for about one minute, then shut engine off and recheck oil level. If oil level still shows low, add another pint of oil. Do this until you get the right oil level.



You don't have to make these oil level checks every time you start up—just the first time you start each day or after a long halt.

If oil level is over ¾ full on your sight indicator, drain some oil but be sure to recheck oil level after running the engine for one minute. Be sure the transfer case oil-filler cap is closed before starting the engine. Later production models have a self-closing oil-filler cap.

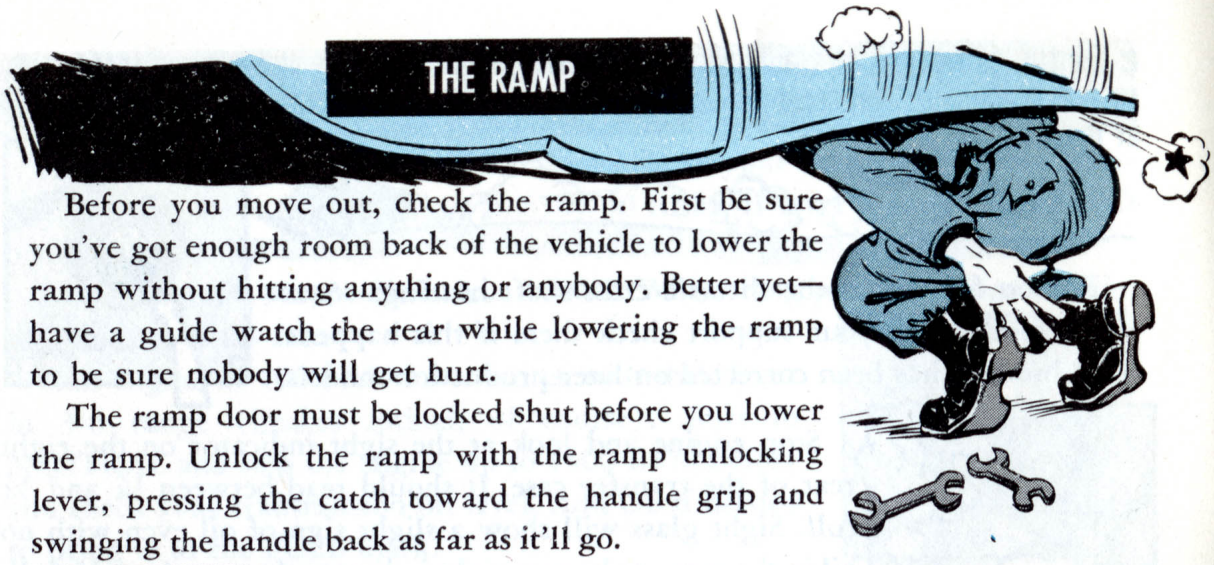



When you start again after a short halt, warm up the engine with shift lever in NEUTRAL and the parking brakes set.

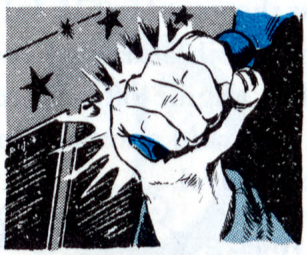
MORE

# THE RAMP



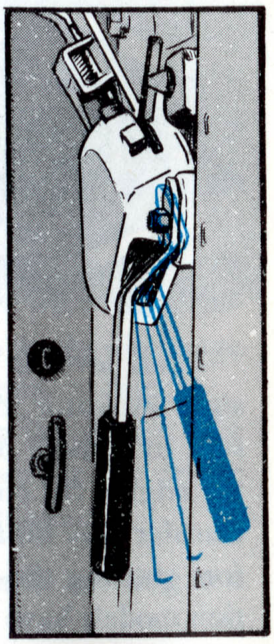
Before you move out, check the ramp. First be sure you've got enough room back of the vehicle to lower the ramp without hitting anything or anybody. Better yet—have a guide watch the rear while lowering the ramp to be sure nobody will get hurt.

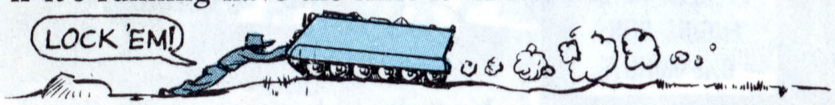
The ramp door must be locked shut before you lower the ramp. Unlock the ramp with the ramp unlocking lever, pressing the catch toward the handle grip and swinging the handle back as far as it'll go.



You are sure to skin your knuckles against the access hatch nomenclature plate unless you switch your grip as you pull down on the ramp locking handle. Use your head and save your hand.

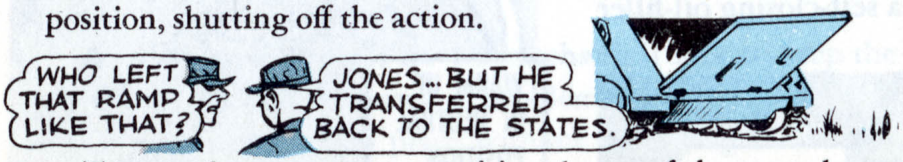
Lock the brakes so the vehicle doesn't creep as the ramp is lowered. You don't need the engine to lower the ramp, but if it's running have the shift lever in NEUTRAL.






To lower the ramp, push forward on the ramp actuating lever which is just below the range selection lever. The further you push this lever forward the faster the ramp drops.

Don't push it all the way forward (which will drop the ramp with a jolt) except in emergency. This lever is spring-loaded, and when you let go of it, it springs into the neutral position, shutting off the action.



To stop the ramp at any position, let go of the ramp lever. The ramp will stay put until you move the lever again.

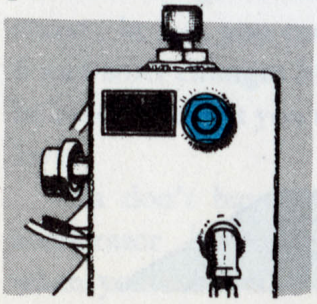
If your rear ramp comes up slow like, chances are you've got some air in the lines. The best cure for a sluggish ramp is to bleed the system starting at the reservoir.

When the ramp touches the ground, let loose of the ramp actuating lever and move the ramp lock handle to the locked position.

Vehicles with serial numbers F271 and below have a two-piece piston rod in the ramp cylinder. Since these rods are brazed they could fail. Make this quick check to be sure you have a good one . . . Lower the ramp and stop it about 18 inches from the ground. Ask four of your buddies (for a total weight of about 600 pounds) to stand on the rear of the ramp. (If you don't have any buddies, use sand bags.)

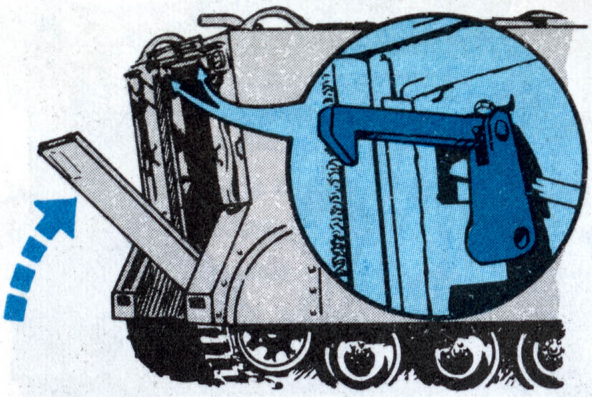
If the piston passes this test it should be OK. If it fails, replace the cylinder assembly and repeat the check.

Later replacement cylinders and late model vehicles have a one-piece cylinder piston rod and don't need this check.



With ramp lowered, check the level of the hydraulic fluid in the ramp sump. The sump is mounted on the right top of the transfer case. The sight glass should show an oil level between the ADD and FULL mark. If it's at or below the ADD mark, fill with OH fluid as required.

LOOK

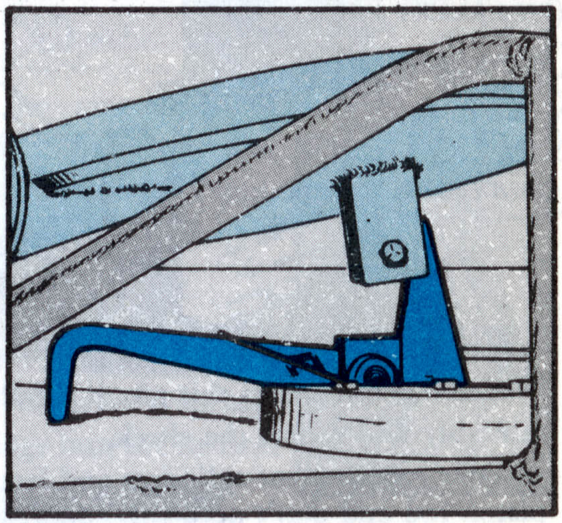


To raise the ramp, you need the transmission in neutral with brakes locked. First move the ramp locking handle to the unlocked position. Then pull the valve actuating lever rearward. With the lever in this position, the higher the engine RPM, the faster the ramp rises. An RPM of 1500 brings up the ramp in 12 to 18 seconds. When you have the ramp all the way up, swing the ramp lock handle forward until the handle latch clicks. Be sure the locks have pulled the ramp all the way inward to the sealed position.

Let go of the ramp actuating lever and let the engine drop to idle—650-700 RPM.

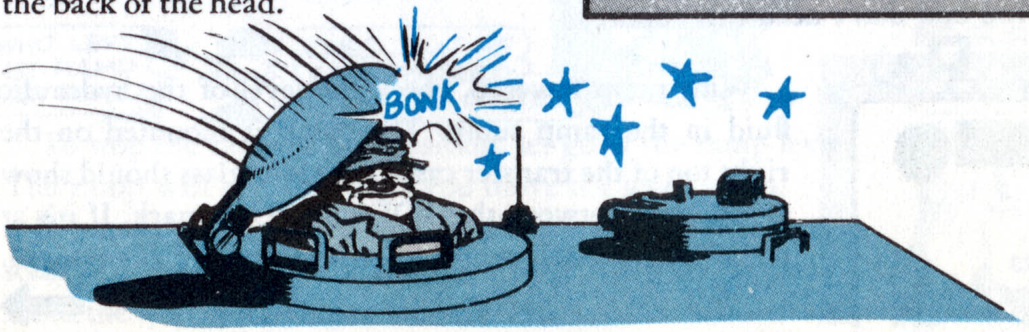
On some of the early models of the M113, there is a sharp edge along the door opening of the inner ramp plate that might cut somebody. Round off this edge with a fine file so nobody gets hurt. On the later production models this has already been done.

## STARTING OUT



Before moving out, check communications equipment and armament, and warn the passengers. Put the vehicle into the right gear for existing terrain conditions. Release brakes and press down on the accelerator slowly and evenly.

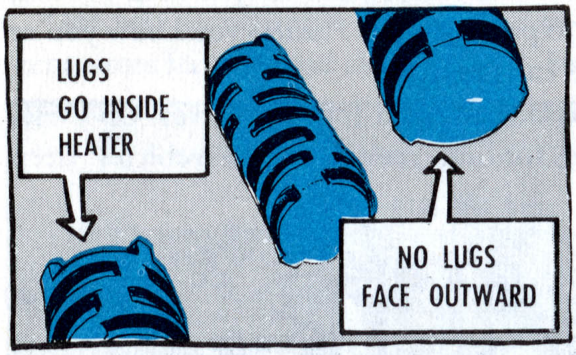
If you are going to operate with the driver's hatch open, be sure the hatch hold-open hook is engaged. If the hatch is swinging free it can wallop you in the back of the head.



## Face up to it

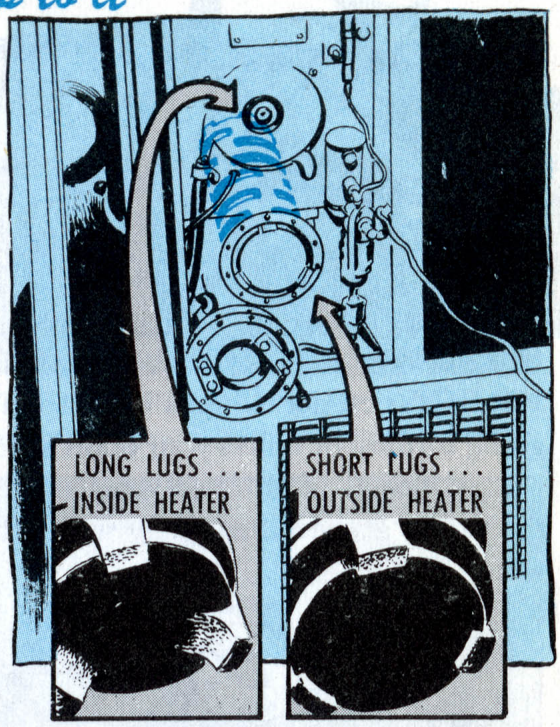
OK . . . so you get a copy of Change 1 to MWO 9-2330-212-20/2.

And you check the baffle in the heater of your G789-series van trailer to make sure the short lugs face you—with one of 'em at 12 o'clock—and the long lugs inside the heater—at the rear. That's what the change to the MWO says.




But you find that the baffle in your heater has only one set of lugs . . . and the baffle's been installed with the blank end facing you and the end with the lugs inside the heater—at the rear.

No sweat. The baffles with the lugs on both ends are test jobs. They get used




until you get the ones with the one end blank . . . and these come in modification kit, FSN 2540-588-7801, G789.

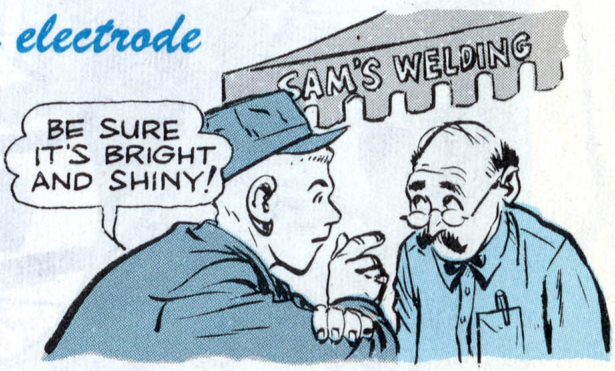
All you have to do with these baffles is make sure the end with the lugs is at the rear—with one of the lugs at six o'clock—and the blank end faces you.

## Welding electrode

You've got a Welding Set, Arc, Inert Gas Shielded (FSN 3431-691-1415) in your outfit. Now you're wondering about the welding electrode to go with it.

You're supposed to use welding electrode, FSN 3439-775-6476. It comes in a 1-lb spool, aluminum alloy, 3/64-in diameter, all position for satisfactory weld. (It's MIL Spec MIL-E-16053G, type 5356).

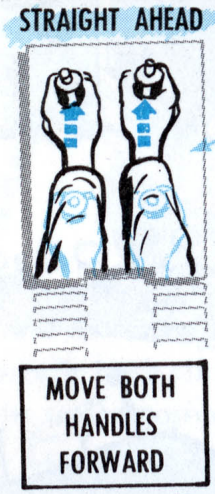
You use this welding set in your No. 2 Supplemental Organizational (2nd Echelon), Automotive Maintenance




Tool Kit (FSN 4940-754-0743), and Field Maintenance Welding Shop Set (FSN 3470-357-7268). Each set gets ten welding electrodes.

If your electrode is locally purchased, it's a must to ask for "bright finish" to use with the welding set.

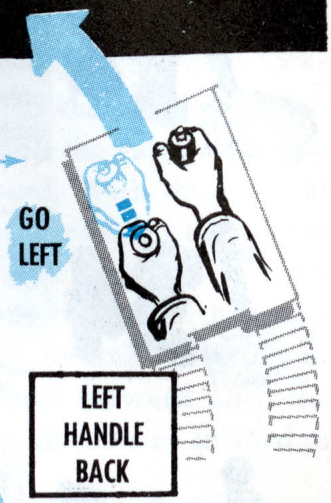
# STEERING

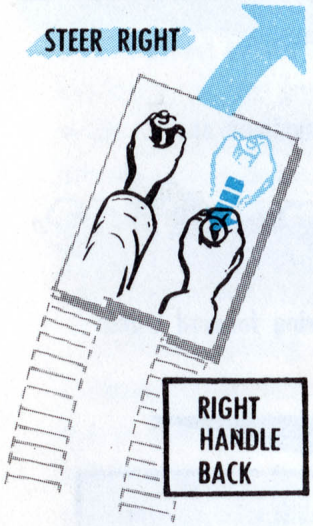


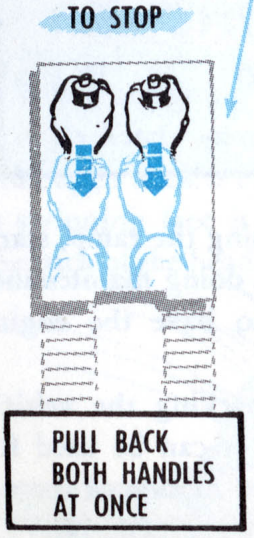

To go in a straight line, leave both steering levers in the full forward position. To steer left, pull back on the left steering lever. To steer right, pull back on the right lever. To stop, pull back on both steering levers at once. You slow down with a series of rearward pumping motions on the handles, letting the handles go full forward between pumps. You pull both handles equally, and, naturally, you have your foot off the accelerator.

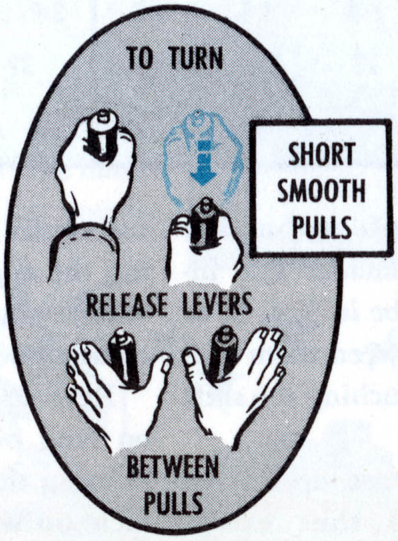
These rules apply if you are going either forward or backward, on either land or water.

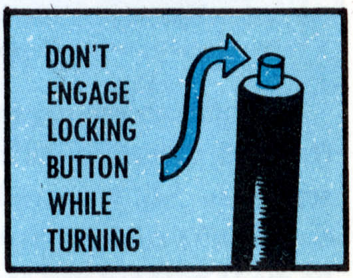
To make a turn, do it with several short, smooth, pulls instead of one long pull or a series of quick jerks. Release the levers between pulls. Never ride the levers or keep them partly engaged, and don't press in the steering lever lock buttons when you are turning the vehicle.

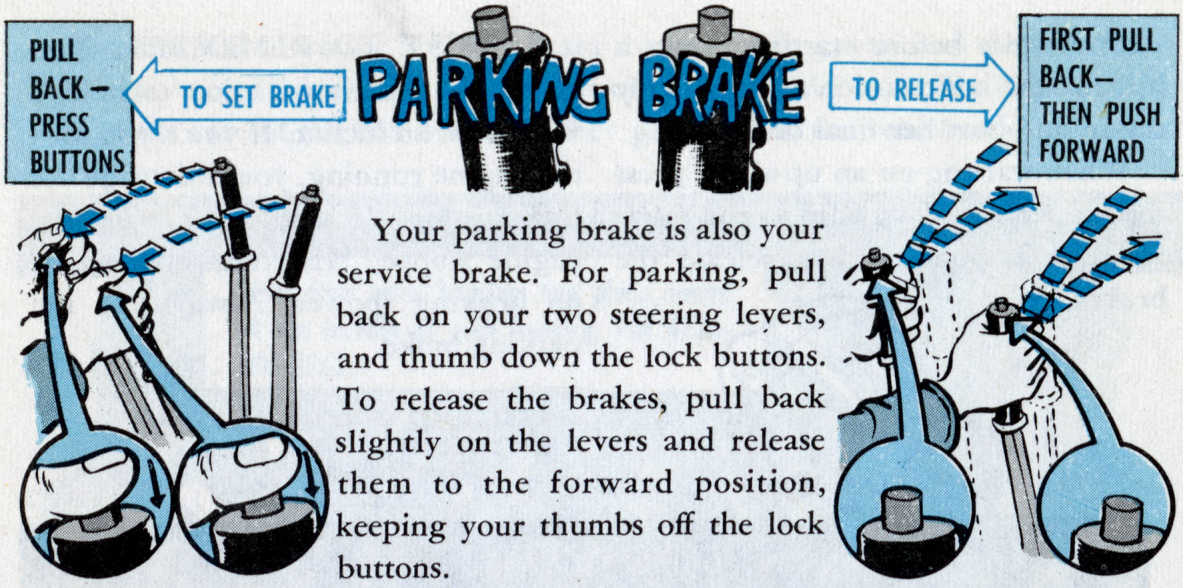







Your parking brake is also your service brake. For parking, pull back on your two steering levers, and thumb down the lock buttons. To release the brakes, pull back slightly on the levers and release them to the forward position, keeping your thumbs off the lock buttons.

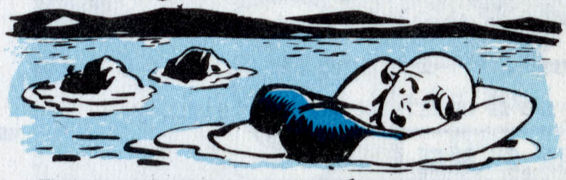
Mostly you will stop by letting up on the accelerator and shifting into neutral, but you can use the brakes for quick stops.

## DRIVING HAZARDS

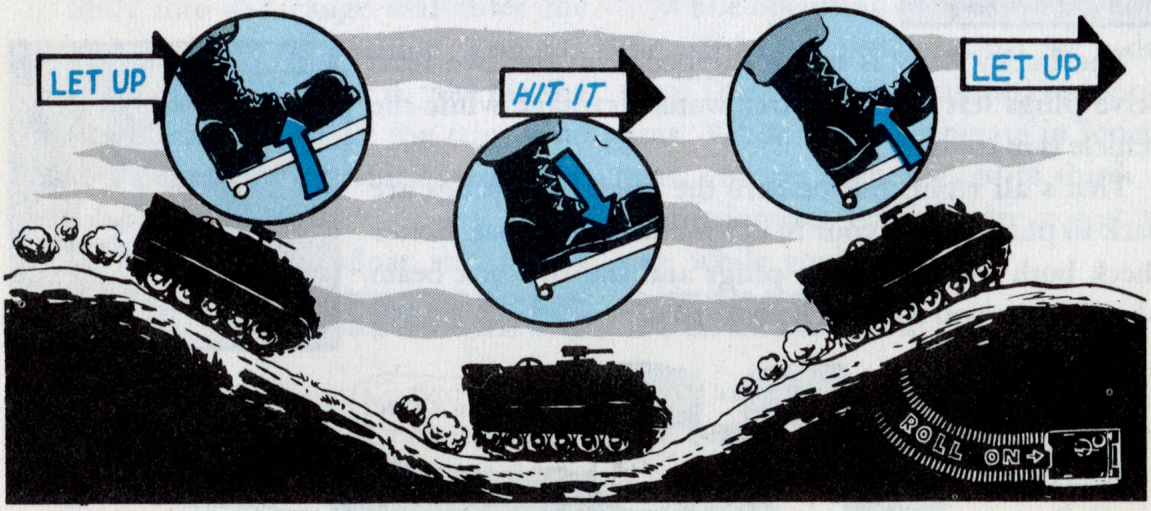
Until you get some experience with the vehicle, it's a good idea to stay in 1-2 or 3-4 range. These ranges give you better control.

On hard pavement, over-steering and high speeds are the hazards.

When you can, hit obstacles and steep grades square on. The same goes for entering and leaving the water.



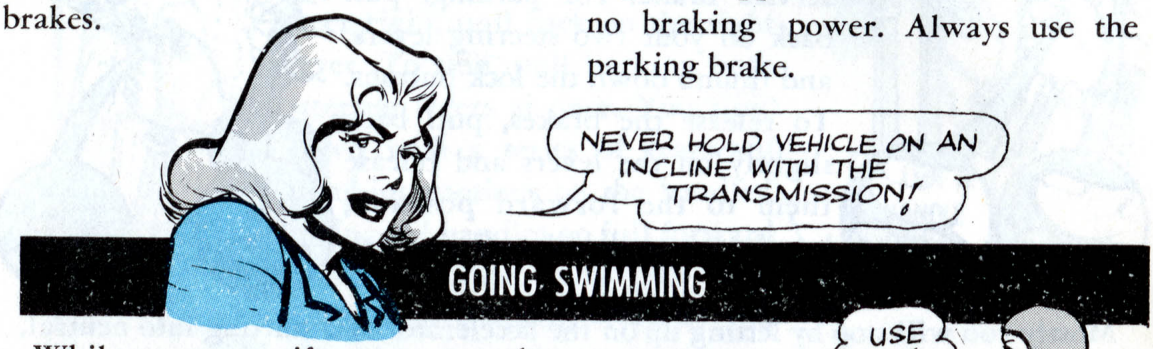
Let up on your accelerator as you come to the crest of a hill or when you start into a ditch. Hit the accelerator again when the vehicle settles over a crest or bottoms in a ditch.



Downshift before starting down a hill. At the bottom, don't let the Lady dig in and bust her final drives.

When starting on an up-slope, press the accelerator down hard so you move forward as soon as you release the brakes.

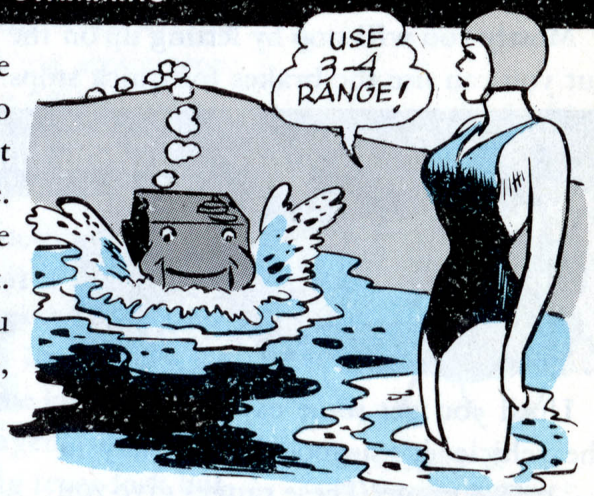
A MUST TO REMEMBER: You never use the transmission to hold a vehicle on an incline. If you try it with the engine running, you'll damage the transmission. If you try it with the engine stopped, the transmission has no braking power. Always use the parking brake.

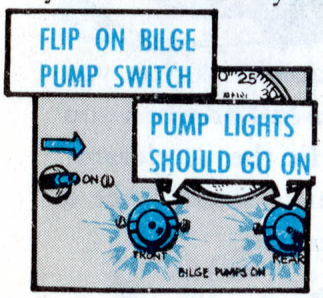



## GOING SWIMMING

While on water—if you seem to be heading for a bank, your instinct is to let up on the throttle. This is the worst thing to do, 'cause you lose steerage. You have better steering control of the vehicle with the engine running fast.

Use the 3-4 range on water. If you use the 1-2 range, the 3-5 or 3-6 range, you'll overheat your engine.

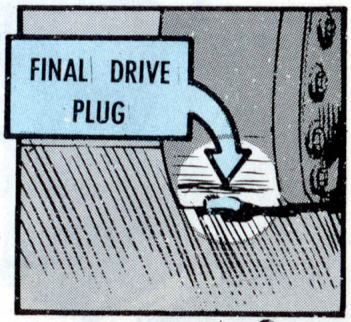



Before entering the water, test your bilge pumps if possible. Flip on the bilge pump switch. Both bilge pump lights should come on. If there is any water in the bilge, it should spill out the bilge pump outlets. If there's no water, air should blow out the outlets. Hand feel to be sure they're working.

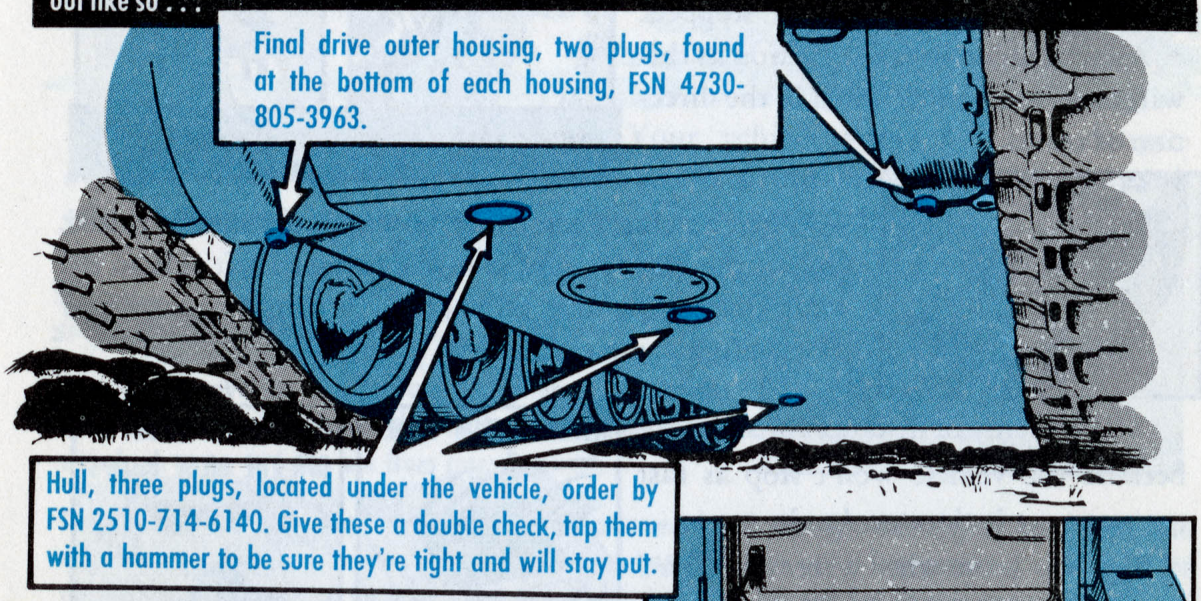
The Lucky Lady is being shipped with the two final drive plugs left out for better water drainage while the vehicle is in route.

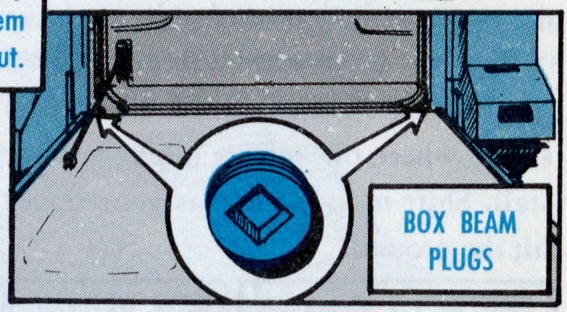
That's all right, but be sure the final drive plugs are back in place before your M113 makes like a boat. Better check both the final drive plugs and the two box beam plugs before you take the Lady for a dip.



If water leaks into the hull box beam during fording, you and the crew may not be able to tell it until you find yourselves under the drink. The bilge pumps don't take care of the box beams. If they get flooded, the vehicle may get nose-heavy and sink.

**In all there are seven different plugs that must be tight and secure before going into water. Check 'em out like so . . .**




**Box beams, two plugs, left and right side, rear of vehicle, FSN 4730-805-3963.**

Before you hit the water—be sure all access doors and hatches are tight and your cargo is distributed evenly. Also your track shrouds must be in place and tight.

Don't forget to extend and lock the trim vane and turn on the bilge pumps. Operation in rough water can be tricky, so play it cool, man, c-o-o-o-o-l.

Shift into 1-2 range and enter the water as slowly as possible. You can damage the trim vane if you hit the water hard and fast. If the trim vane won't operate, the vehicle won't be stable in the water.

As soon as you're afloat, shift to 3-4 range, which you use for all forward driving on water.

While operating in open water, hold the accelerator pedal against the pedal stop. This prevents an upshift to fourth gear. While you can operate in fourth gear, you get higher speed in third.

Speedometer readings are not accurate while you're afloat.

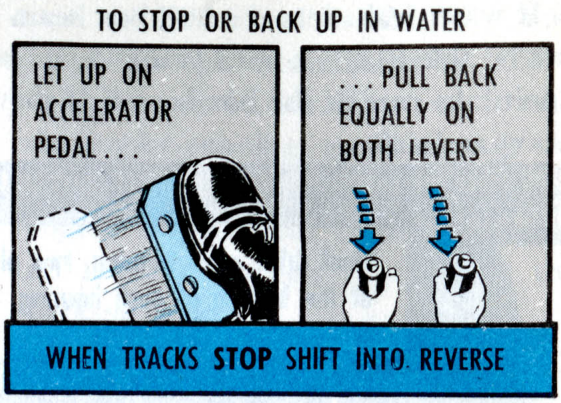
## WINNING NUMBER

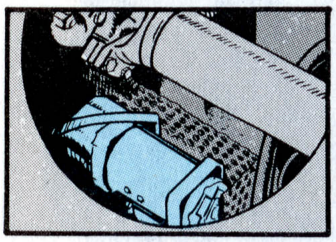
In PS 103 on Page 17 two different FSN's are given for the M113 APC's hull drain plug. The one near my picture, FSN 2510-714-6140, is the right one. Somebody hit the wrong key on the other one. Excuse please. So sorry!

Connie

To stop or back up in water, first let up on the accelerator pedal and pull back equally on both levers. When you have the tracks stopped, shift into reverse. Remember . . . don't shift into reverse until the tracks have stopped.

Avoid sudden breaking action as this will make the vehicle pitch in the direction of travel.

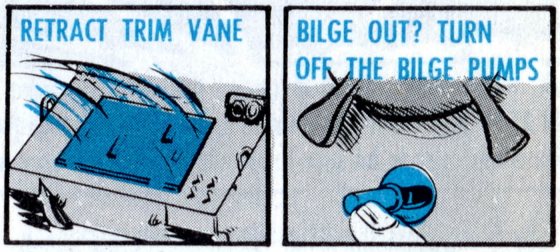


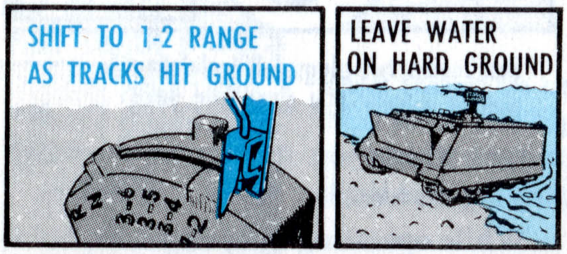



When a vehicle is moving in water, the nose is raised. One of the bilge pumps is in the forward left side so the water doesn't get to it. Slow down or stop if you can and let the bilge pump catch up.

Allow plenty of distance for stopping because the vehicle won't stop as fast on water as it does on land.

Try to leave the water on hard ground instead of mushy banks or steep slopes where the vehicle might mire or stall. Shift to 1-2 range as your tracks hit the ground.




After you get out of the water, retract the trim vane and as soon as the bilge is clear, turn off the bilge pumps.

When you get time, check the suspension and final drive lubricants to see if water has leaked into them. If the oil has water bubbles or is discolored, replace it. Do it like it says in LO 9-2300-224-10.

By the way, the LO directions should be followed extra close on the M113. Read the sections on oil changes and filter cleaning real careful because they call for different things at different lube services.

## ENGINE COOLING FAN

Having trouble with your engine cooling fan spitting out oil?

Cheer up, it's easy to fix. If your fan won't behave itself, send it to your support unit and they'll take out the breather-check valve (Ord Part 9756885) and replace it with a pipe plug that goes by FSN 4730-223-9267.

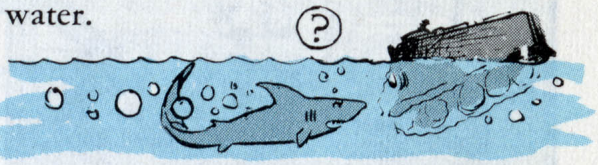
The cause of the leak is oil being forced out the breather-check valve.

With no breather-check valve you got no leaks.

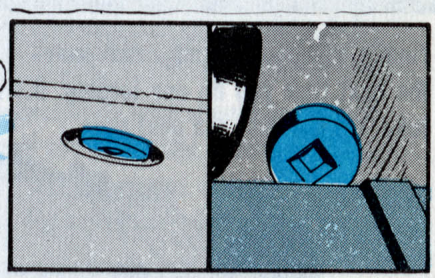
# SALT WATER CARE

If you get salt water on the aluminum and magnesium alloy parts of your M113, it'll eat through them like termites eating through a pine board.

An amphibious operation in the ocean would load it with salt which you have to flush away with plenty of fresh water.

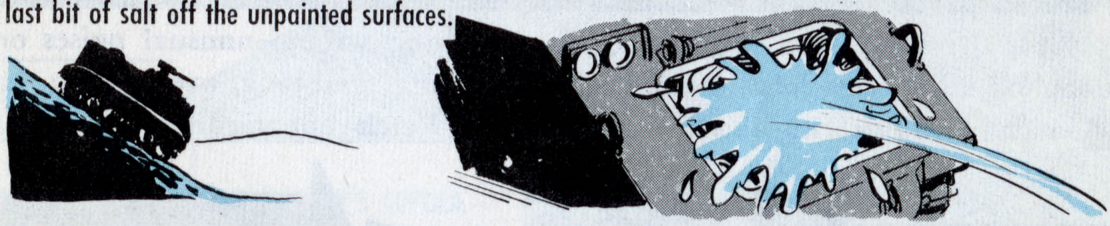



It doesn't take much salt, either. Your vehicle would pick up a dangerous dose of salt just sitting on the deck of an ocean liner or fording a semi-salt (tidewater) stream.

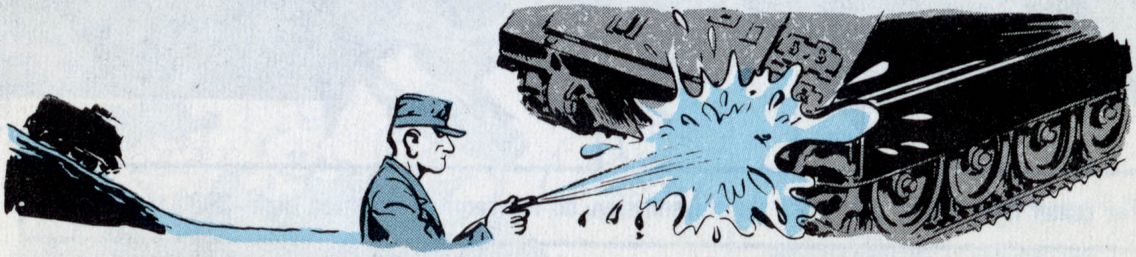


First you remove the two forward hull drain plugs and the drain plugs in the final drives, then flush out your bilge pumps with fresh water to keep 'em from corroding.

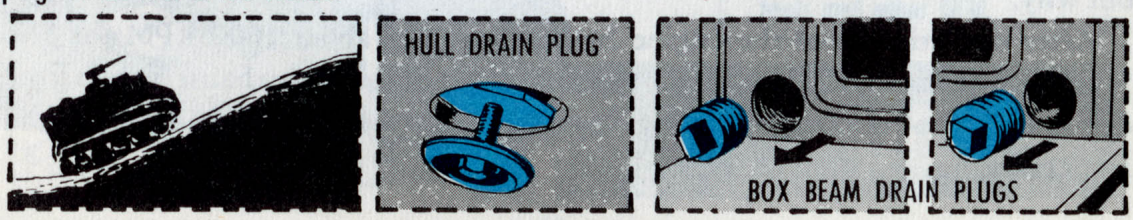
Drive the vehicle on a slope so its nose points downward with the right side slightly lower. Open the engine access door and flush out the engine compartment. Always use a **low-pressure** water hose for all flushing and washing. Be careful not to get electrical parts too wet but be sure you get every last bit of salt off the unpainted surfaces.



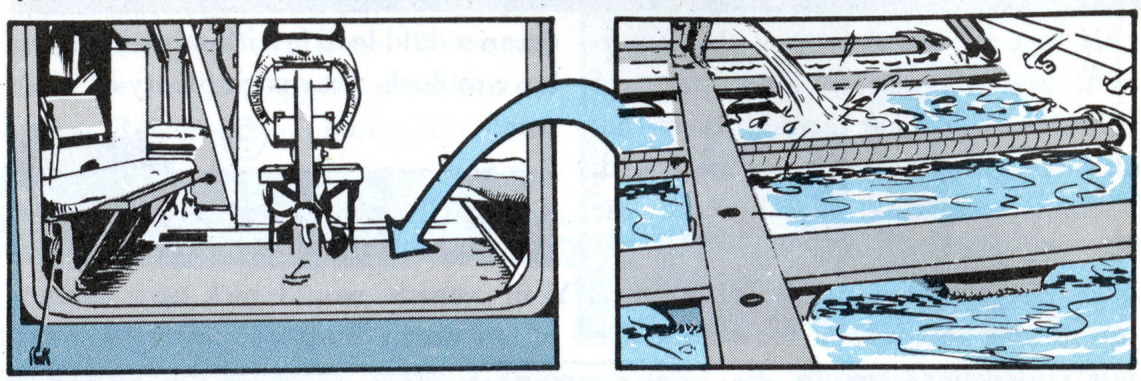
Next put the vehicle nose downward and lower on the left side. Flush final drive and hull plates, using **plenty** of fresh water. On the final drives to be sure all water is drained before you screw the plugs back in . . . it's best to drive for a few miles to get out all the water.



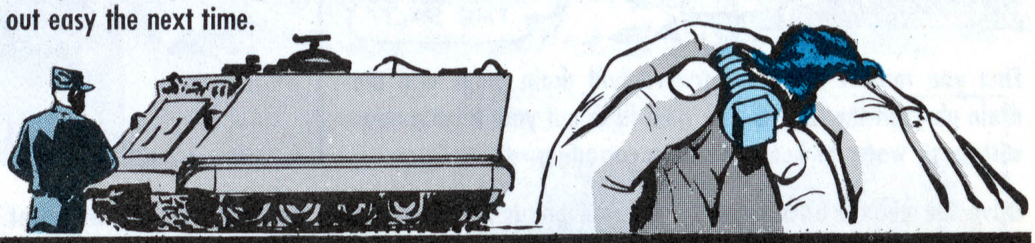
Next slope the vehicle so the front end is higher. Remove one hull rear drain plug and the two box-beam plugs at the rear of the vehicle.



Lower the vehicle ramp, take out the three personnel compartment floor plates and flush the hull bottom plates.



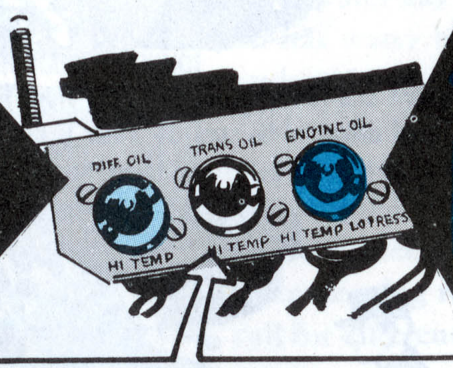
Finally, put back all plugs and plates. All plugs have got to be in place and secure or you'll be in trouble the next time you do any fording. It wouldn't hurt to lube the plug threads lightly with GAA so you can take 'em out easy the next time.



## DURING OPERATION CHECK

While driving, be on the lookout for anything wrong—unusual noises or odors and unexpected instrument readings, binding, grabbing, overheating, or too much play in steering and braking linkages. Watch your warning light panel.

The left warning light comes on when differential oil temperatures get above the safe level—300° to 310° F.




The right light comes on when oil pressure in the engine is below safe operating pressure—9 to 13 PSI. This is normal when you start, but it should go out within 10 seconds.

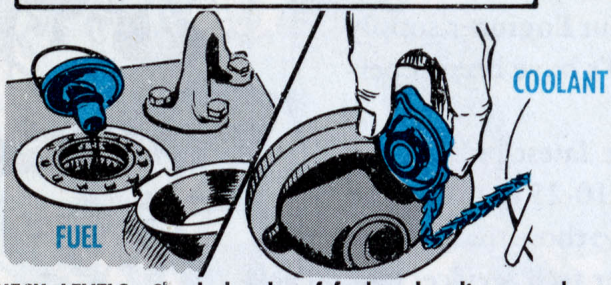
The center light shows red when the transmission oil temperature goes too high—300° to 310° F.

During operations, if ANY of these lights go on, stop the engine and find out why.

After operation, cool the engine by running it at about 1000 RPM for 3 to 5 minutes if the tactical situation permits. This'll let the exhaust valves cool down and keep 'em from warping. And also help keep the exhaust manifold from cracking.

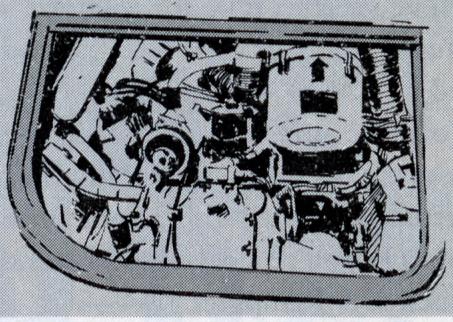
# DAILY CHECKS

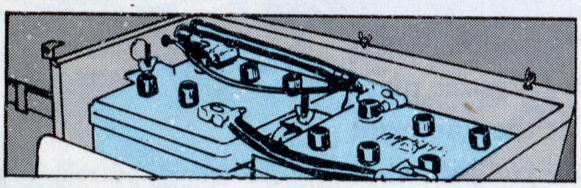
Do this daily check right and you can stop a lot of trouble before it happens. Make your own list, but it should include . . .




CHECK LEVELS—Check levels of fuel and radiator coolant.

POWER PLANT—Clean power plant and power plant compartment and check for oil, fuel or coolant leaks. Drain water out of fuel filter.



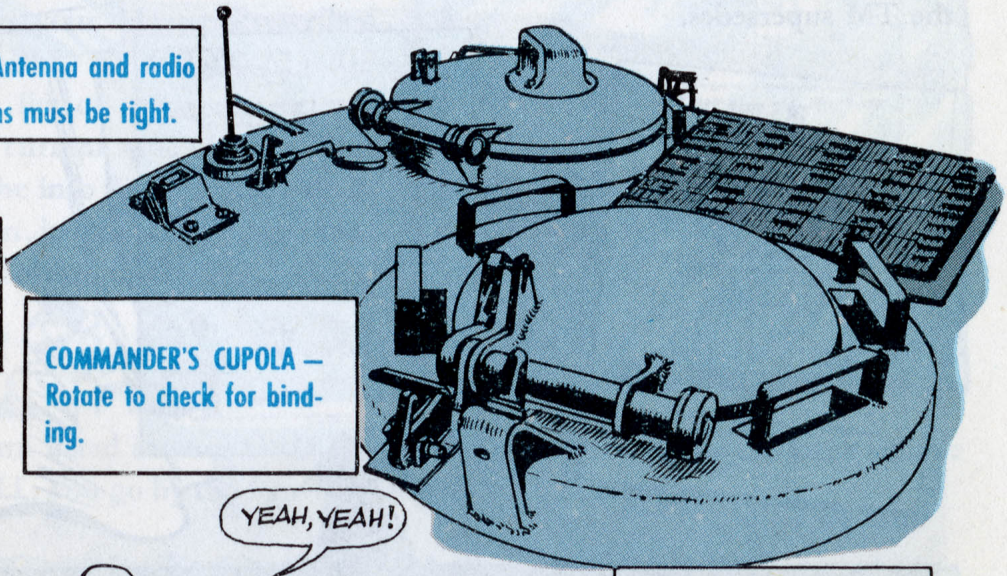


BATTERIES—Electrolyte level should be 3/8 inch over plates. If you add water at temperatures below 32°F, run the engine at least 15 minutes to mix the water and electrolyte.

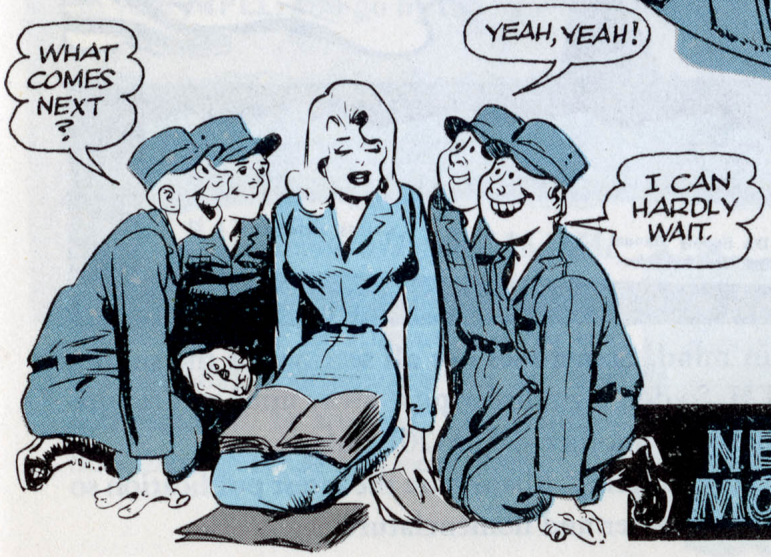
RADIO MOUNTS—Antenna and radio mount connections must be tight.

CLEAN—Bilge pump inlet screens and periscopes.

COMMANDER'S CUPOLA — Rotate to check for binding.



LIGHTS AND HORN—Working OK?




MISCELLANEOUS — Towing connections, fire extinguishers, tools and other OEM.

NEXT MONTH part II

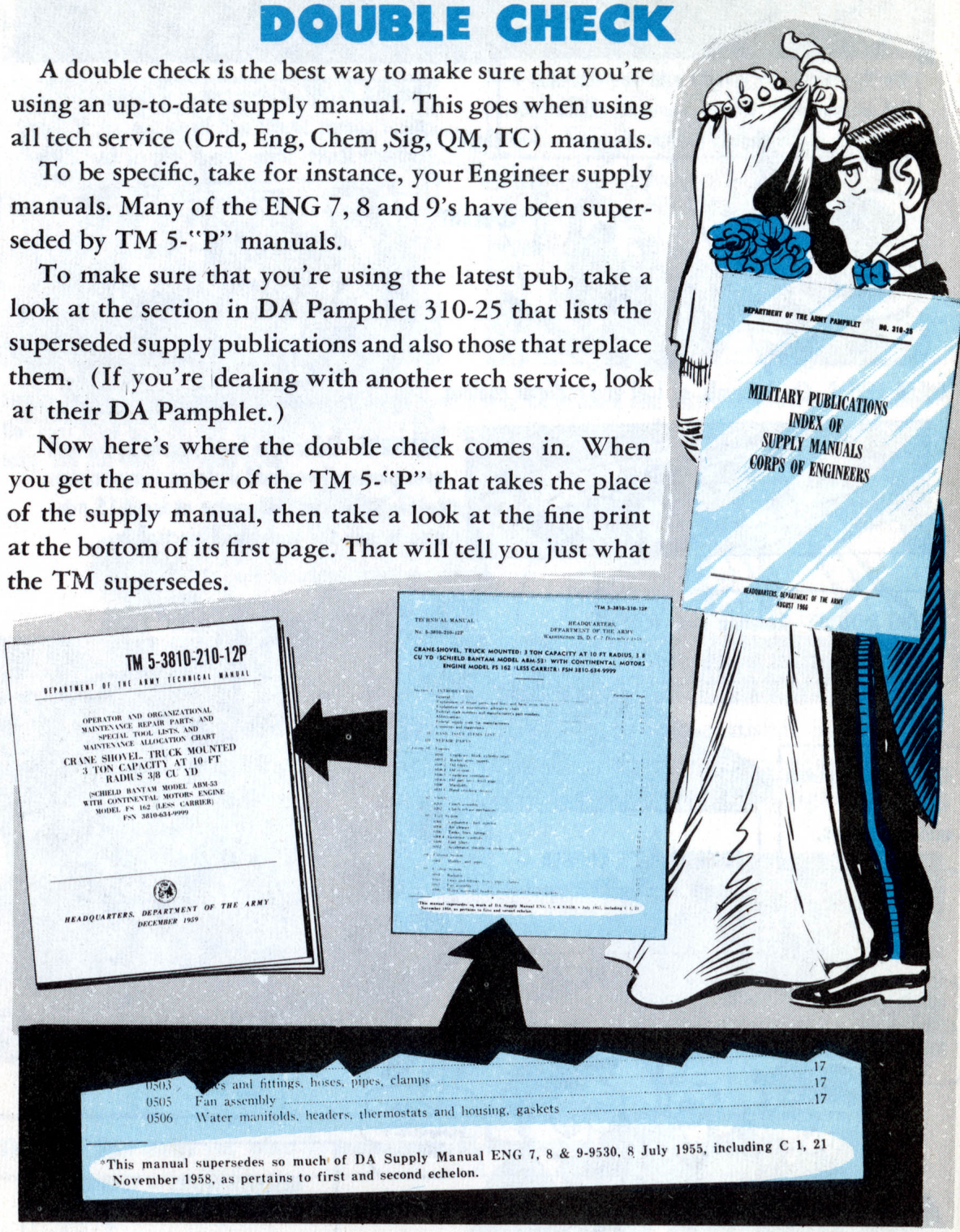
# DOUBLE CHECK

A double check is the best way to make sure that you're using an up-to-date supply manual. This goes when using all tech service (Ord, Eng, Chem ,Sig, QM, TC) manuals.

To be specific, take for instance, your Engineer supply manuals. Many of the ENG 7, 8 and 9's have been superseded by TM 5-"P" manuals.

To make sure that you're using the latest pub, take a look at the section in DA Pamphlet 310-25 that lists the superseded supply publications and also those that replace them. (If you're dealing with another tech service, look at their DA Pamphlet.)

Now here's where the double check comes in. When you get the number of the TM 5-"P" that takes the place of the supply manual, then take a look at the fine print at the bottom of its first page. That will tell you just what the TM supersedes.

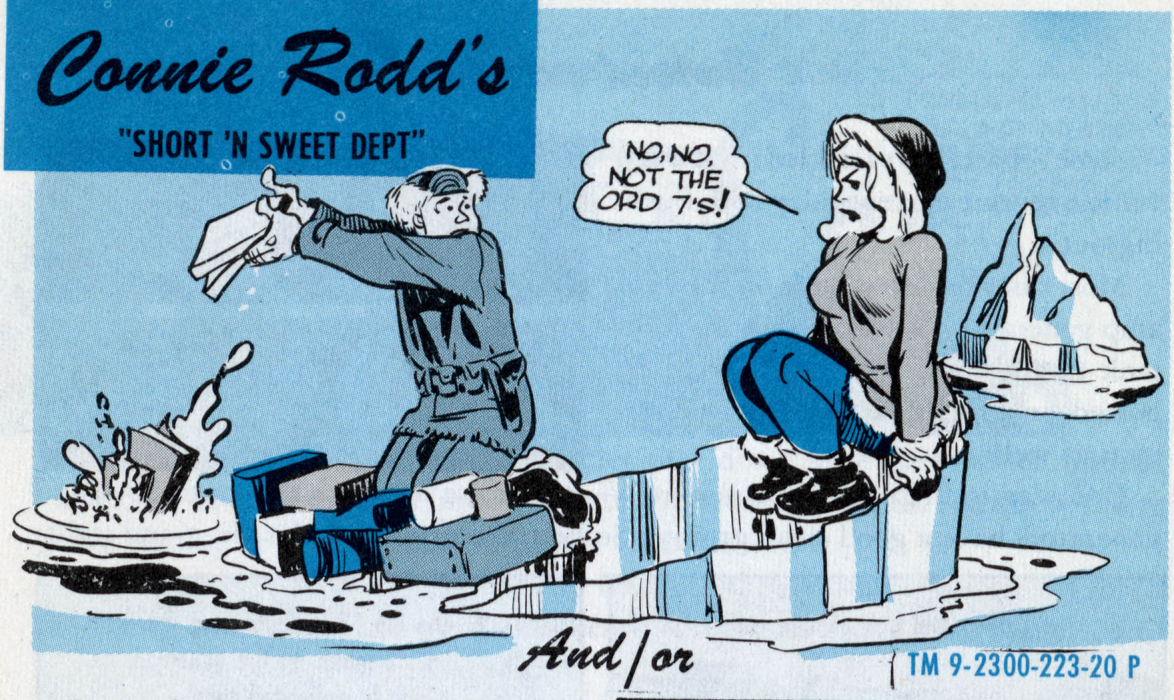



There's something to keep in mind. Sometimes not all sections of the supply manual are superseded by the TM. So don't go throwing it away until you're sure that the whole thing's been replaced by another -10 or -20P pub.

And when you're doing your part ordering, always use the latest publication so you'll be sure to get the latest FSN number and nomenclature.

# Connie Rodd's

"SHORT 'N SWEET DEPT"




*And/or* TM 9-2300-223-20 P

Better hang on to your ORD 7's. Even though your Master Prescribed Load List (MPLL) TM 9-2300-223-20P gives you a list of required stockage items for all current issue vehicles. This supersedes the info found in the allowance column in the Organizational Spare Parts Section of the ORD 7.

| (1) NOMENCLATURE EQUIPMENT APPLICATION | (2) TECH SV | (3) FEDERAL STOCK NO. | (4) UNIT PACK |
|---|---|---|---|
| LAMP UNIT, headlight | 5 | 6240-155-7820 | 1 |
| G501 | | | |
| TOTAL DENSITY | | | |
| LAMP UNIT, headlight | 9 | 6220-696-0249 | 1 |
| G740 | | | |
| G741 | | | |
| G742 | | | |
| G744 | | | |
| G749 | | | |
| G758 | | | |
| G792 | | | |

When items listed in your ORD 7 or -20P are duplicated for the same vehicle in your MPLL, you go by the figures in the MPLL.

ORD 7 SNL G749

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 6240-696-0249 | G740 | GE-4860A | 8334009 | w, w/CABLES and wtrprf CONNECTORS LAMP-UNIT, HEADLIGHT: sealed beam, amber colored lens (used on vehicles in areas where regulations require the use of amber head lamps) | 2 | ea | T 1 |

ORD 7 SNL G749

But where items are listed in your ORD 7 or -20P and are **not** found in the MPLL they may be needed for organizational maintenance but are not authorized to be stocked. You requisition these parts as you need them.

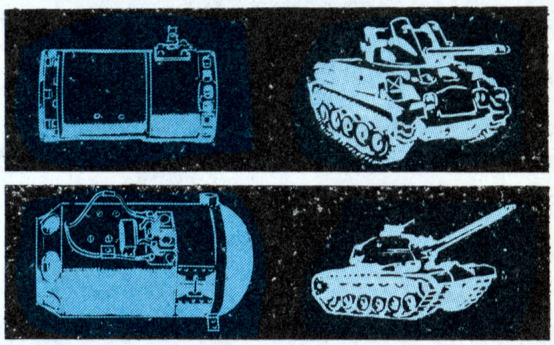
| 0609.1—HEAD, TAIL, AND MARKER LIGHTS, LAMPS, AND LAMP UNITS | | | |
|---|---|---|---|
| BRACKET, left taillight and trailer air connection | 1 | ea | ‡ |
| BRACKET, mounting, switch | 1 | ea | ‡ |
| BRACKET, right taillight and trailer air connector | 1 | ea | ‡ |
| CLIP, SPRING TENSION: retn, blackout driving light lamp-unit | 3 | ea | .3 |

‡ MEANS AN ITEM CAN BE ORDERED WHEN NEEDED

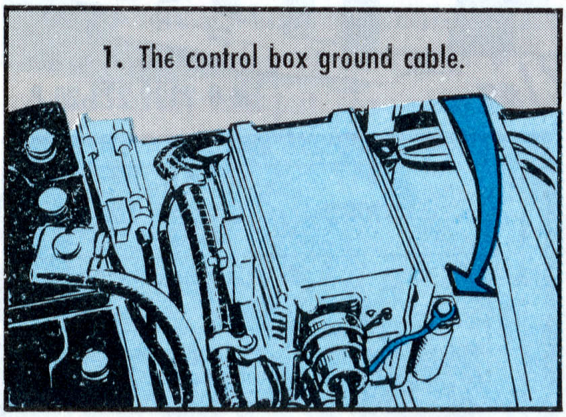
# Burned out coil

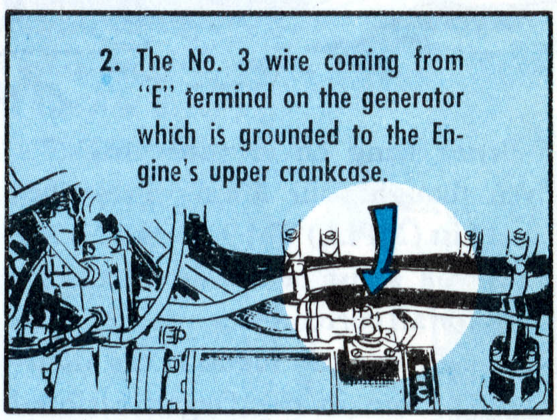
Some reports have trickled in on track vehicle reverse current relay coils burning out.

Most cases reported were on the 150-amp generator systems used in the light tank family, but, a few cases were reported on the 300-amp generator systems as well.

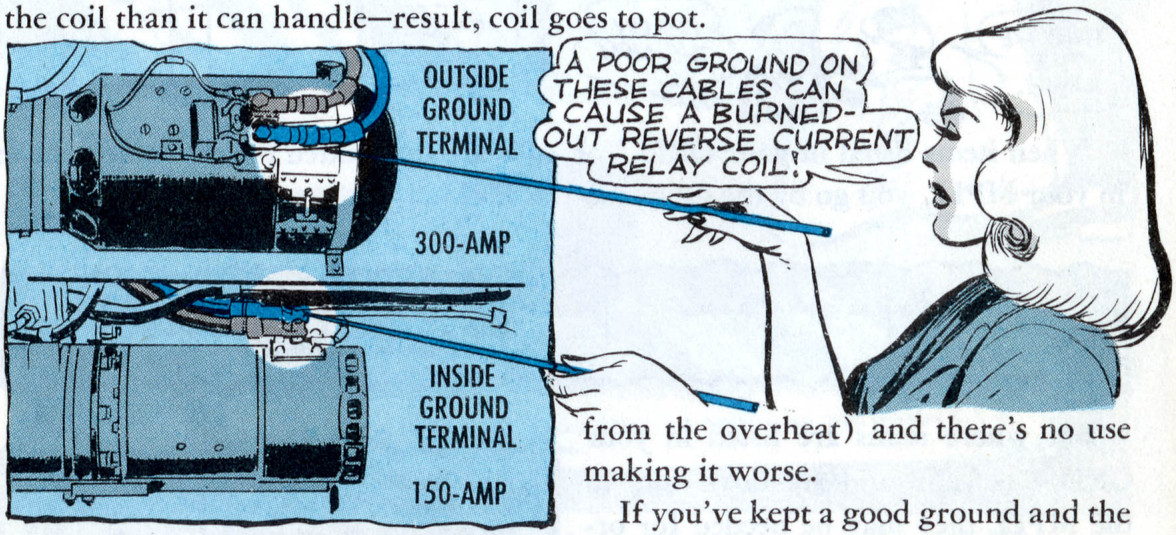


One way to help this situation—now—is to make sure both the control box and generators have a good clean ground. So keep the ground cables clean and tight:




A poor ground creates a resistance in the line sending more current through the coil than it can handle—result, coil goes to pot.



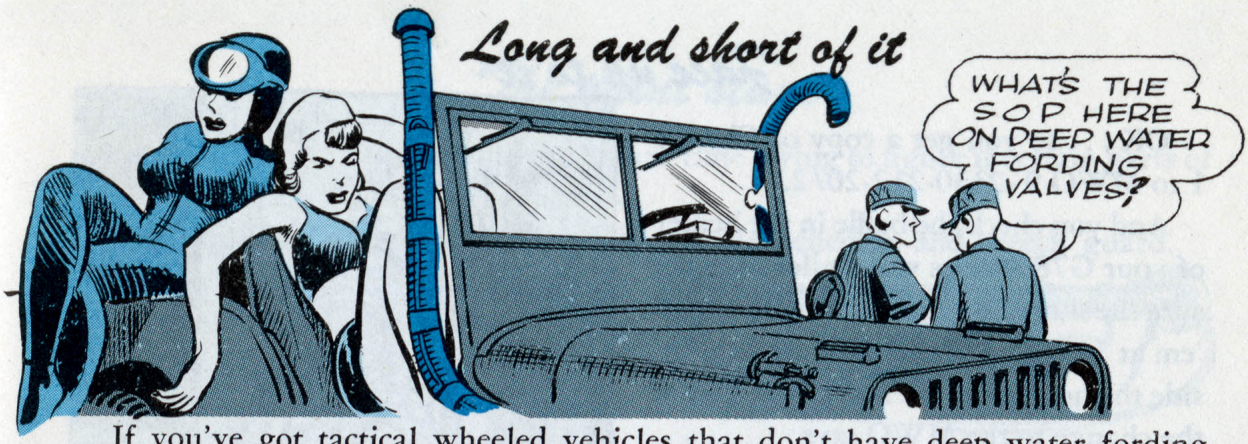

If the control box fails, don't be putting a new one back into the tank until the generator has been rechecked.

The bad box could have raised trouble inside the generator (unwind 'em, etc., from the overheat) and there's no use making it worse.

If you've kept a good ground and the coil still goes kaput, send in a UER on DA Form 468.

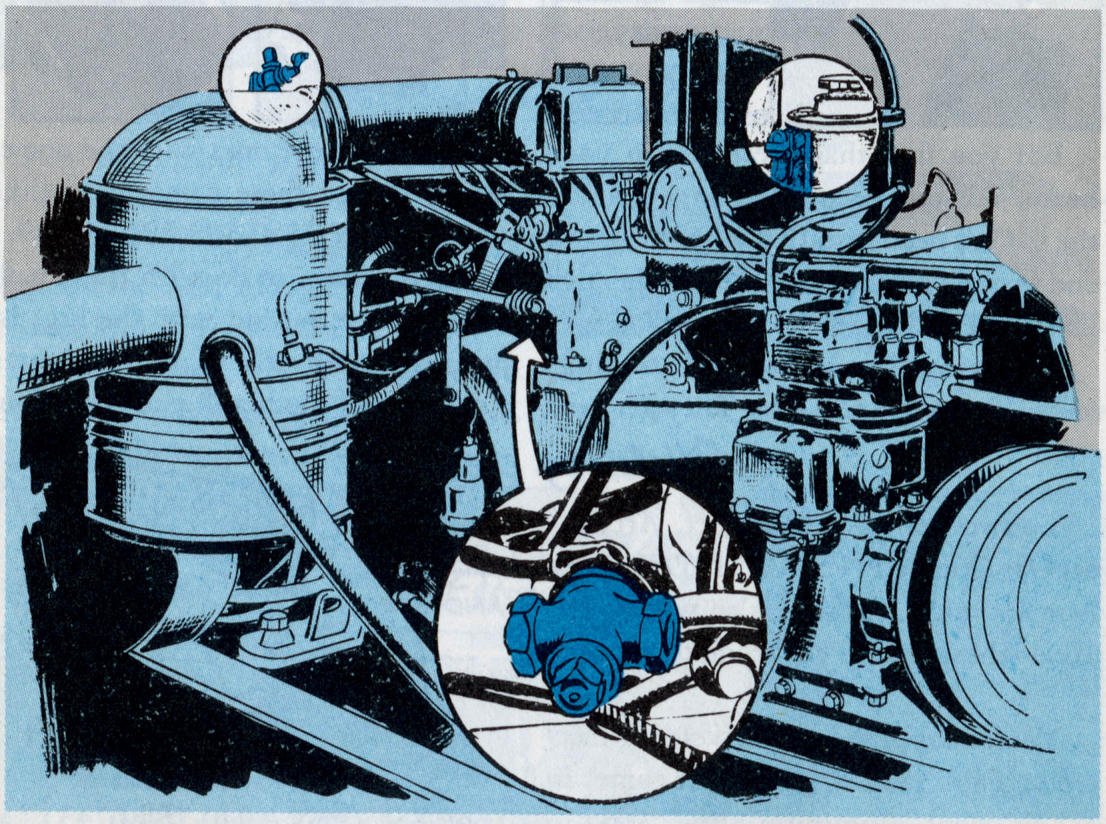
Getting your support unit's help with the details may provide the missing link that'll lead to the solution.

## *Long and short of it*




If you've got tactical wheeled vehicles that don't have deep water fording valves, it's best not to break into a sweat to put 'em on . . . unless you know you're going fording or unless your outfit's SOP calls for 'em.

Late models of wheeled vehicles are issued without fording valves. On these, the valves get installed along with other fording gear from the vehicles' deep water fording kits . . . when needed.



SB 9-155 (23 Oct 57) will clue you on the vehicles put out without fording valves. They get the "long kit," including fording valves, listed in the SB.

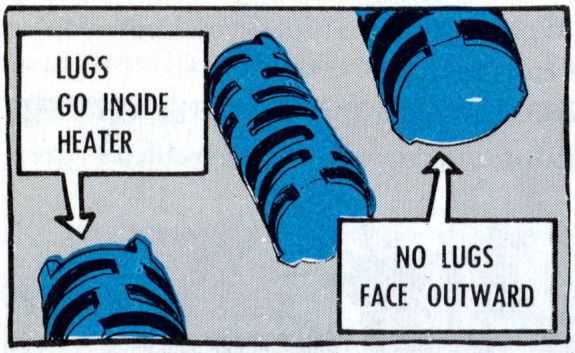
By some chance you may've got one of the older vehicles that's had the fording valves removed. In that case, too, you'll need the "long kit" instead of the "short" when you go fording.

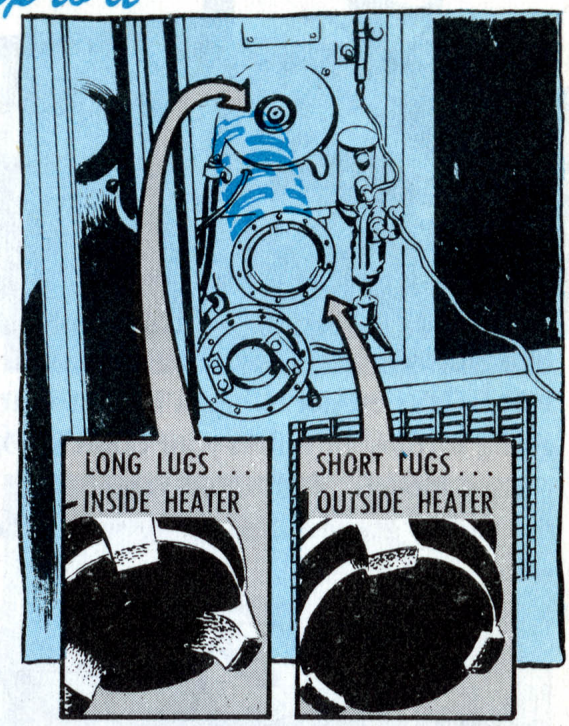
The SB also lists fording kits for tracked vehicles . . .all of 'em in the "long" class.

## Face up to it

OK . . . so you get a copy of Change 1 to MWO 9-2330-212-20/2.

And you check the baffle in the heater of your G789-series van trailer to make sure the short lugs face you—with one of 'em at 12 o'clock—and the long lugs inside the heater—at the rear. That's what the change to the MWO says.



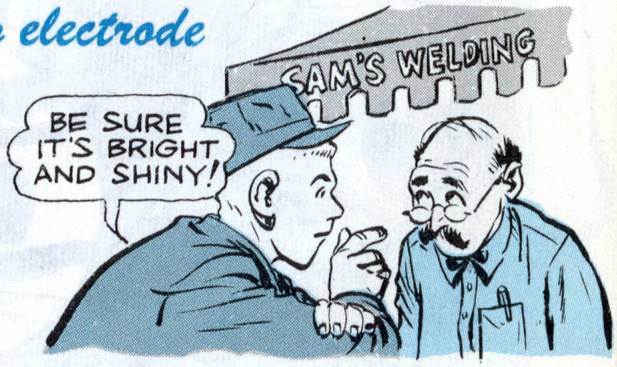




But you find that the baffle in your heater has only one set of lugs . . . and the baffle's been installed with the blank end facing you and the end with the lugs inside the heater—at the rear.

No sweat. The baffles with the lugs on both ends are test jobs. They get used until you get the ones with the one end blank . . . and these come in modification kit, FSN 2540-588-7801, G789.

All you have to do with these baffles is make sure the end with the lugs is at the rear—with one of the lugs at six o'clock—and the blank end faces you.

## Welding electrode




You've got a Welding Set, Arc, Inert Gas Shielded (FSN 3431-691-1415) in your outfit. Now you're wondering about the welding electrode to go with it.

You're supposed to use welding electrode, FSN 3439-775-6476. It comes in a 1-lb spool, aluminum alloy, 3/64-in diameter, all position for satisfactory weld. (It's MIL Spec MIL-E-16053G, type 5356).

You use this welding set in your No. 2 Supplemental Organizational (2nd Echelon), Automotive Maintenance Tool Kit (FSN 4940-754-0743), and Field Maintenance Welding Shop Set (FSN 3470-357-7268). Each set gets ten welding electrodes.

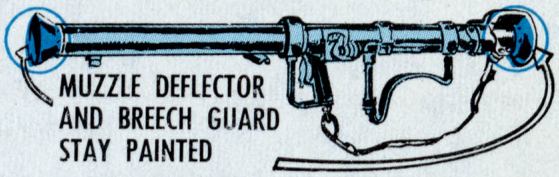
If your electrode is locally purchased, it's a must to ask for "bright finish" to use with the welding set.

## The paint stays

Hear tell some outfits are having a hard time trying to figure if certain parts of their 3.5-in rocket launcher get painted.

The big to-do is over the inside of the muzzle deflector and breech guard.

You get the rocket launcher with the inside of the muzzle deflector and breech guard painted, but somebody comes along and tells you to get rid of the paint and coat the parts with oil.

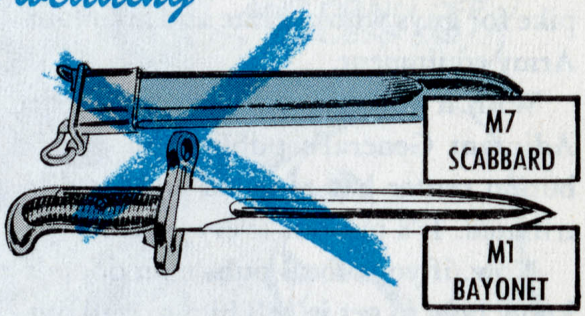



That's not the way it ought to be 'cause it's not what TM 9-2002 says to do. Paragraph 117 in the TM puts it this way: "Parts of the launcher from which paint has worn off will be painted in accordance with TM 9-2851. Purpose of such painting is to prevent light reflection from worn spots which may become shiny."

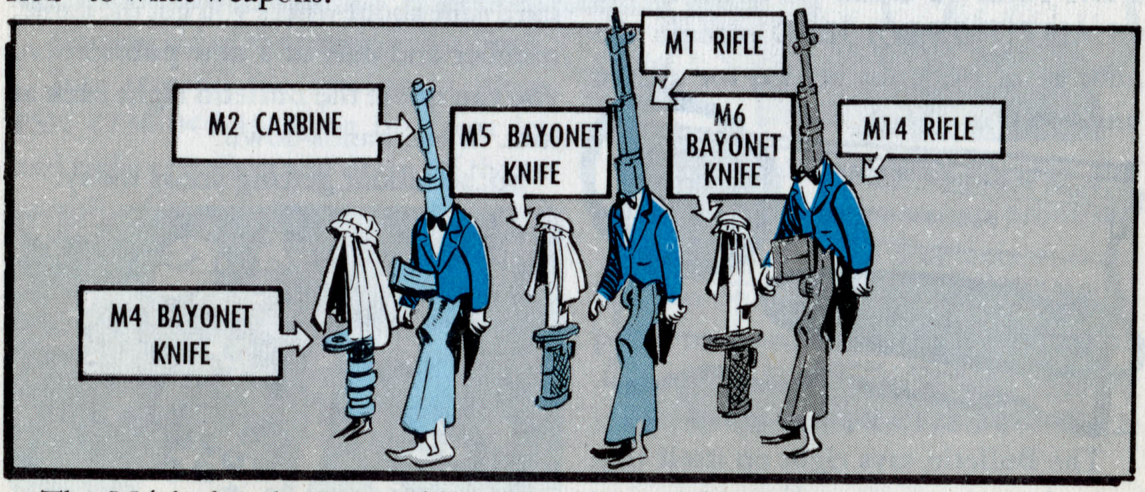
So . . . since the insides of the muzzle deflector and breech guard are painted when you get the launcher, you want to keep them painted.

## Bayonet wedding

Been a-scratchin' your noggin over just what bayonet replaces the obsolete M1 with its M7 scabbard—or jest what weapons the M4, M5, M5A1 and M6 bayonet-knives are made for?




For the record, here's a thumbnail lineup of what bayonet-knives are "married" to what weapons.




The M4 is for the M2 carbine. The M5 and M5A1 go steady with the M1 rifle and the M6 is wedded to the M14 rifle.

For more detailed dope on repair parts for the M4, M5, M5A1 and M6 bayonet-knives, as well as info on their M8A1 scabbard, get hold of TM 9-1005-237-14P.

# *Get the hottest list*

Need the latest publication soonest? Or earlier? No sweat. Just pass the word to your Publication Section that your outfit needs a copy each week of—

**BULLETIN, PUBLICATIONS CENTER, AG**

U.S. ARMY AG PUBLICATIONS CENTER
[illegible]

BULLETIN NO — Effective until 12 June 1962 unless sooner rescinded or superseded

FOR USE BY INSTALLATION COMMANDERS MAINTAINING A PUBLICATIONS STOCKROOM

12 June 1962

Agencies, other than National Guard, submitting DA Form 12-4, Requisition for Initial Distribution of Publications and Blank Forms, to this Center should request sufficient copies of Bulletins to provide redistribution to each Unit, Activity and Staff Agency for which they have direct supply responsibility.

The publication and distribution is authorized by paragraph 7h(9), the Army.

Just like's listed on DA Form 12-4.

This here now Bulletin is just about the hottest thing that's rolled down the pike for guys who operate and maintain Army equipment.

With it you can tell what pubs The Adjutant General's publication distri bution center has received and/or distributed. It's put out every week.

Now, if your local pubs man doesn't know how to get it, tell him to pull out a DA Form 12-4 and jot down in the QUANTITY REQUIRED column the number of Bulletins needed for all the units on post.

CATIONS FURNISHED IN QUANTITY DETERMINED B

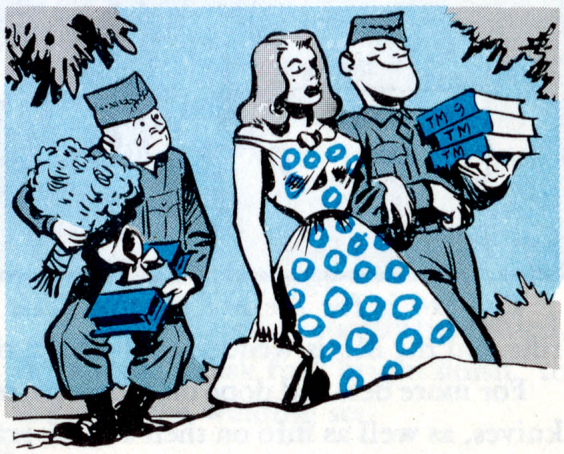
| PUBLICATION | QUANTITY REQUIRED |
|---|---|
| USAF MANUAL 75-1 | |
| BULLETIN, PUBLICATIONS CENTER, AG | |
| DA PAM 310-1, INDEX - ADMINISTRATIVE PUBLICATIONS [illegible] DA Pam | |

The Bulletin says right on itself that enough copies ought to be requested so that there'll be enough for each unit, activity and staff agency. So, maybe you ought to have a copy for the S-4, the maintenance officer and the communications officer . . . as well as copies for the personnel officer and adjutant.

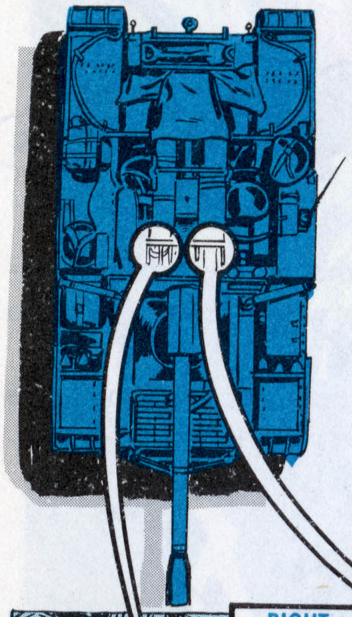
The pubs man ships off the Form 12-4 to the pubs center, and before you can quote chapter and verse from your favorite TM, you've got the Bulletin on the way.

Then, whenever anybody gives you a hard time about where you got the name, number and date of a new publication, you can quote the Bulletin right back at him. Wins, hands-down.

So, see about getting yours today.



# *Stop that strain...drain*



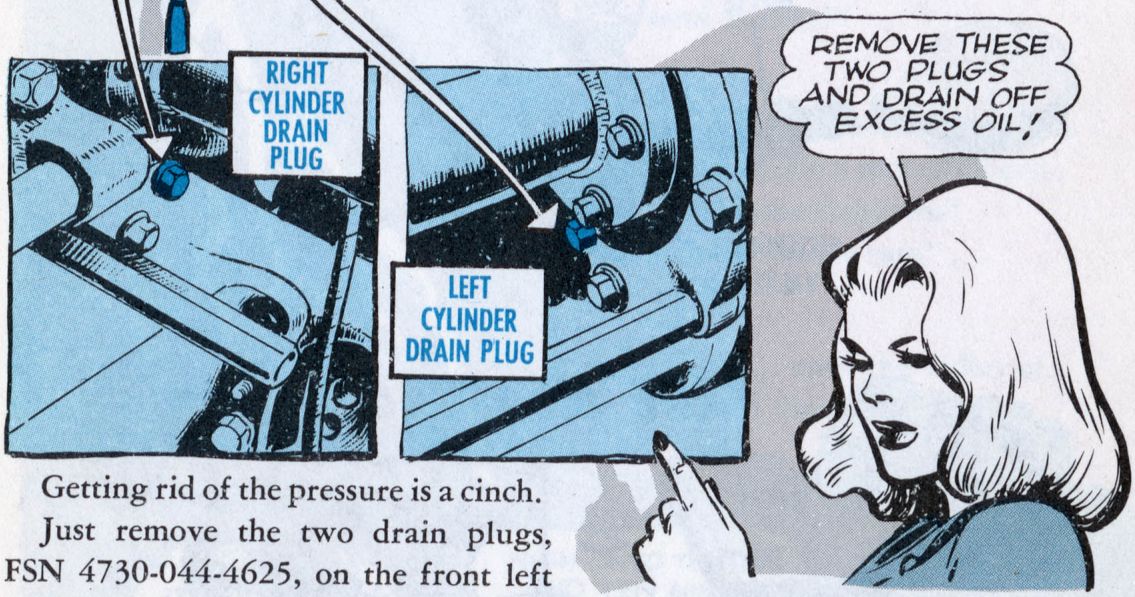
And man—do it weekly.

Or before every firing if you're riding the range in your M56 SP 90-mm gun.

Do what? Drain what?—The oil that's sneaking past the floating piston in your recoil mechanism, that's what.

Yup, you can buy yourself more trouble than a kangaroo with a pouch full of glue if you don't get rid of that oil.

It can really raise cain with your front recoil covers . . . 'cause nothing makes 'em lose their slim trim look faster than oil pressure in the wrong place.




Getting rid of the pressure is a cinch.

Just remove the two drain plugs, FSN 4730-044-4625, on the front left and right cylinders and drain off the excess oil.

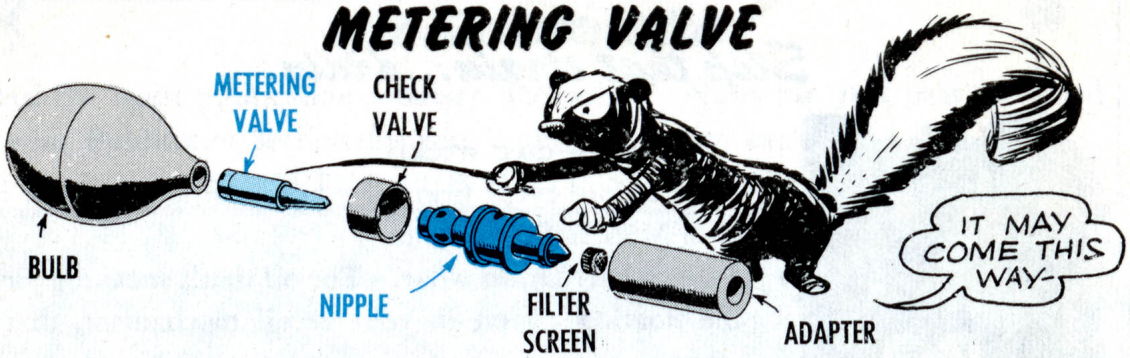
If two or more tablespoons of oil drains out of either cylinder in a 24-hour period, buzz your support people, PDQ.

It could mean leaking O-rings and open the way to more serious problems.

Speaking of recoil problems, remember that only your support unit is supposed to exercise the recoil mechanism . . . and the exercising is done the way it says in Change 1 to TM 9-1015-222-35.

Another thing—never, never allow a gun to slide out of battery. It can really bust up the recoil the next time she's fired.

## METERING VALVE

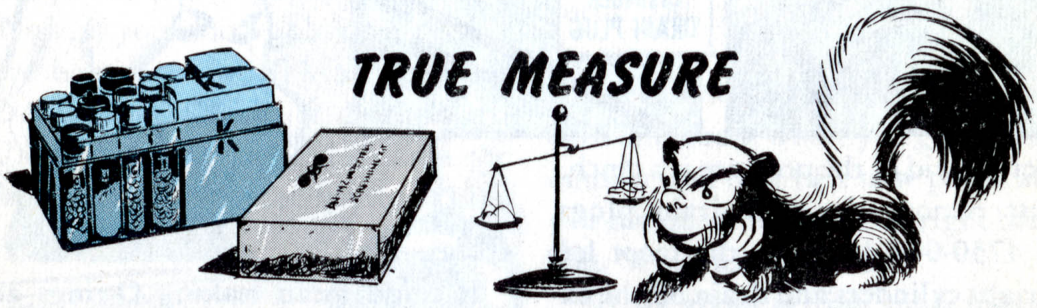



The sampling bulb in your M23 carbon monoxide detector kit may have its metering valve, instead of its nipple, inserted into the bulb.

The bulb works OK either way you put it together. But when the valve itself is next to the bulb, you have to remove the bulb whenever you need to adjust the valve.

Swapping the parts like this puts the metering valve where you can adjust it without bothering the bulb.

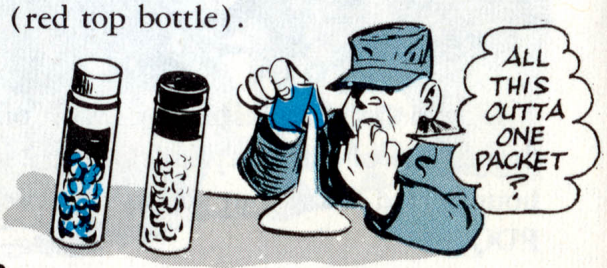
## TRUE MEASURE

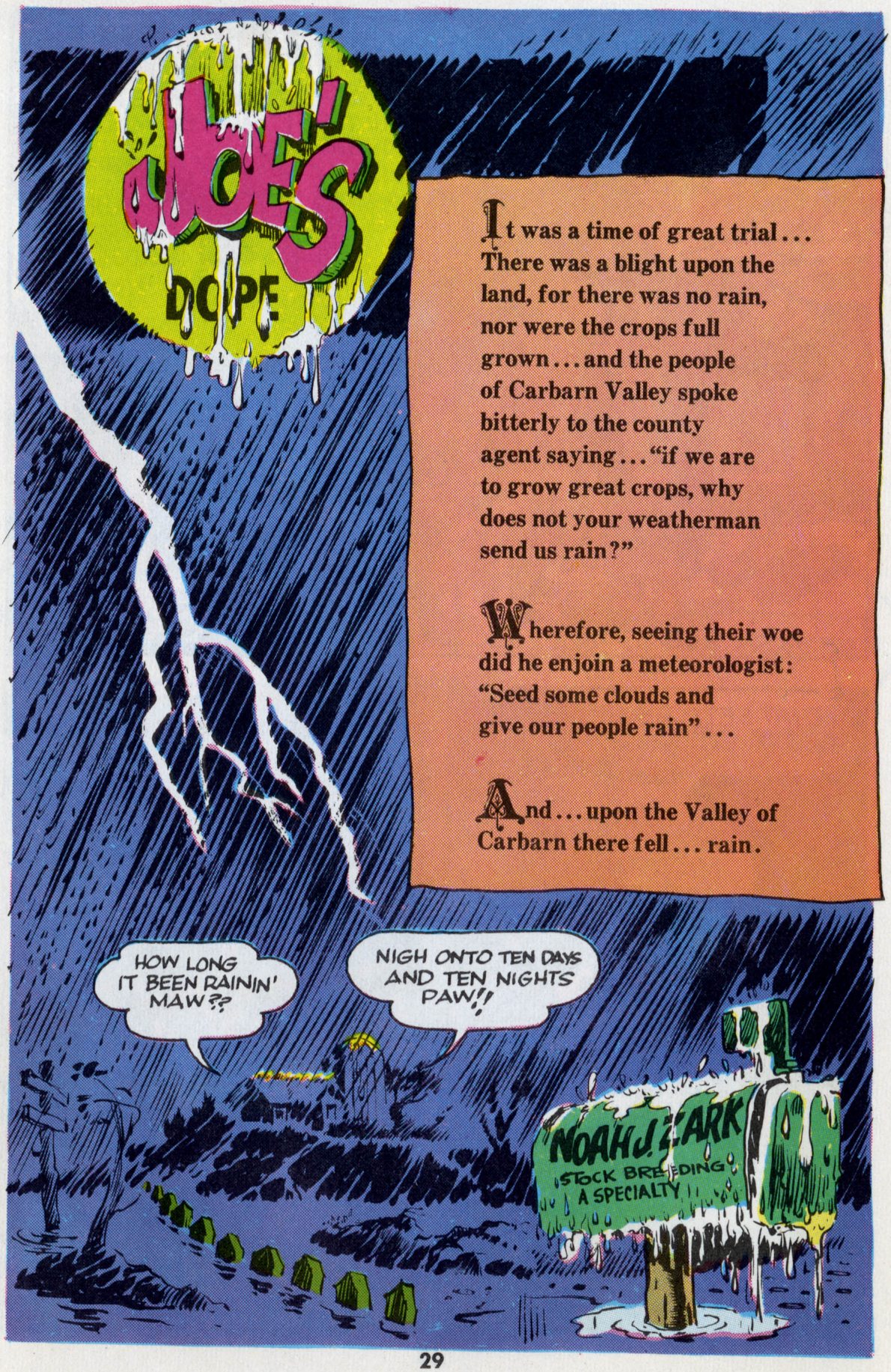


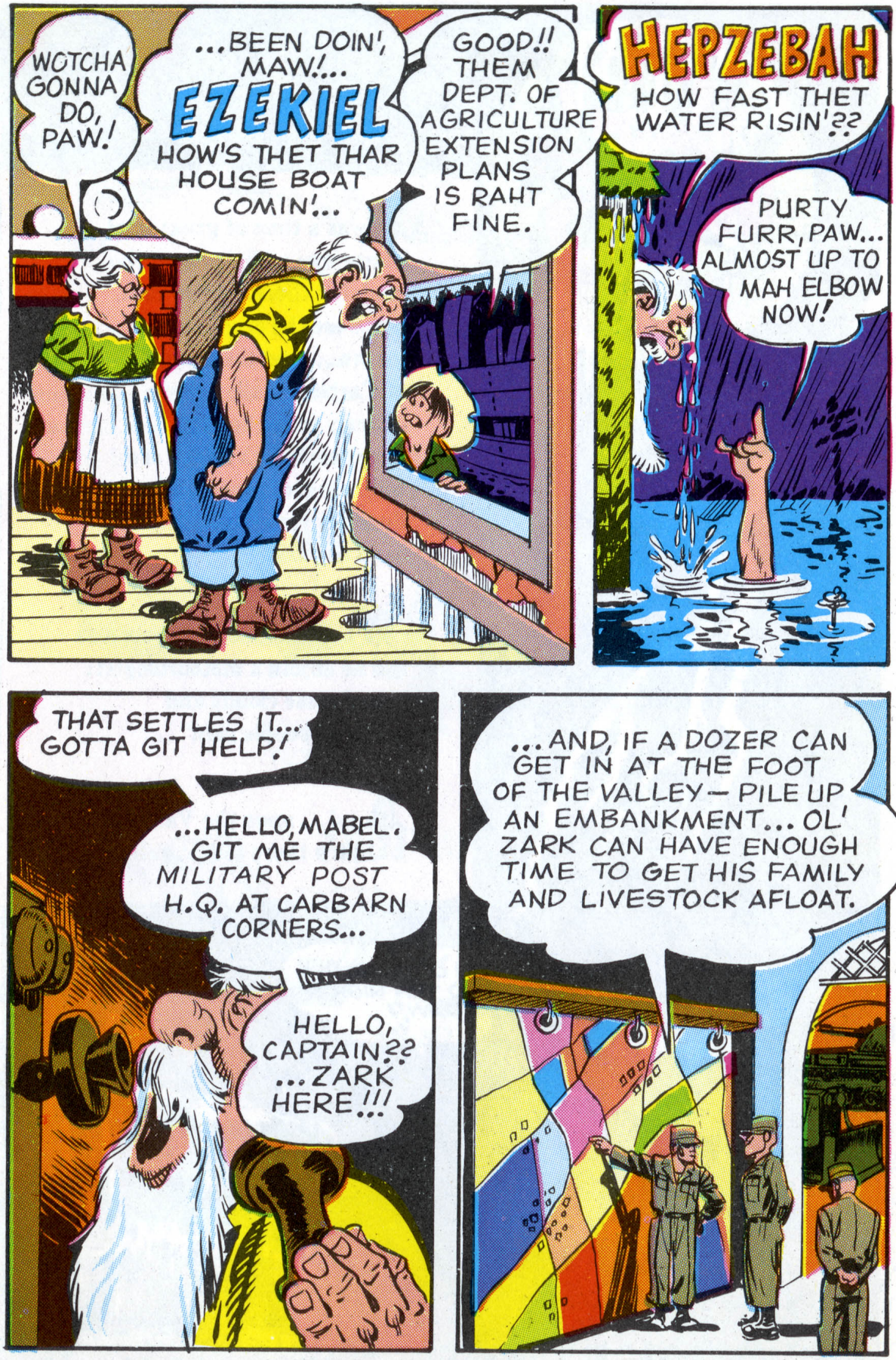
Next time you order an AN-M2 Water Testing Kit (FSN 6665-171-9747), some of the chemical tablets in the kit will be individually wrapped in foil.

The wrapper's supposed to keep the chemicals in tablet form, so you'll not end up with a bottle of powder. However, even if any of 'em do powder-up on you, you'll know that each wrapper contains only one tablet, and you won't have to worry with measuring and guess work.

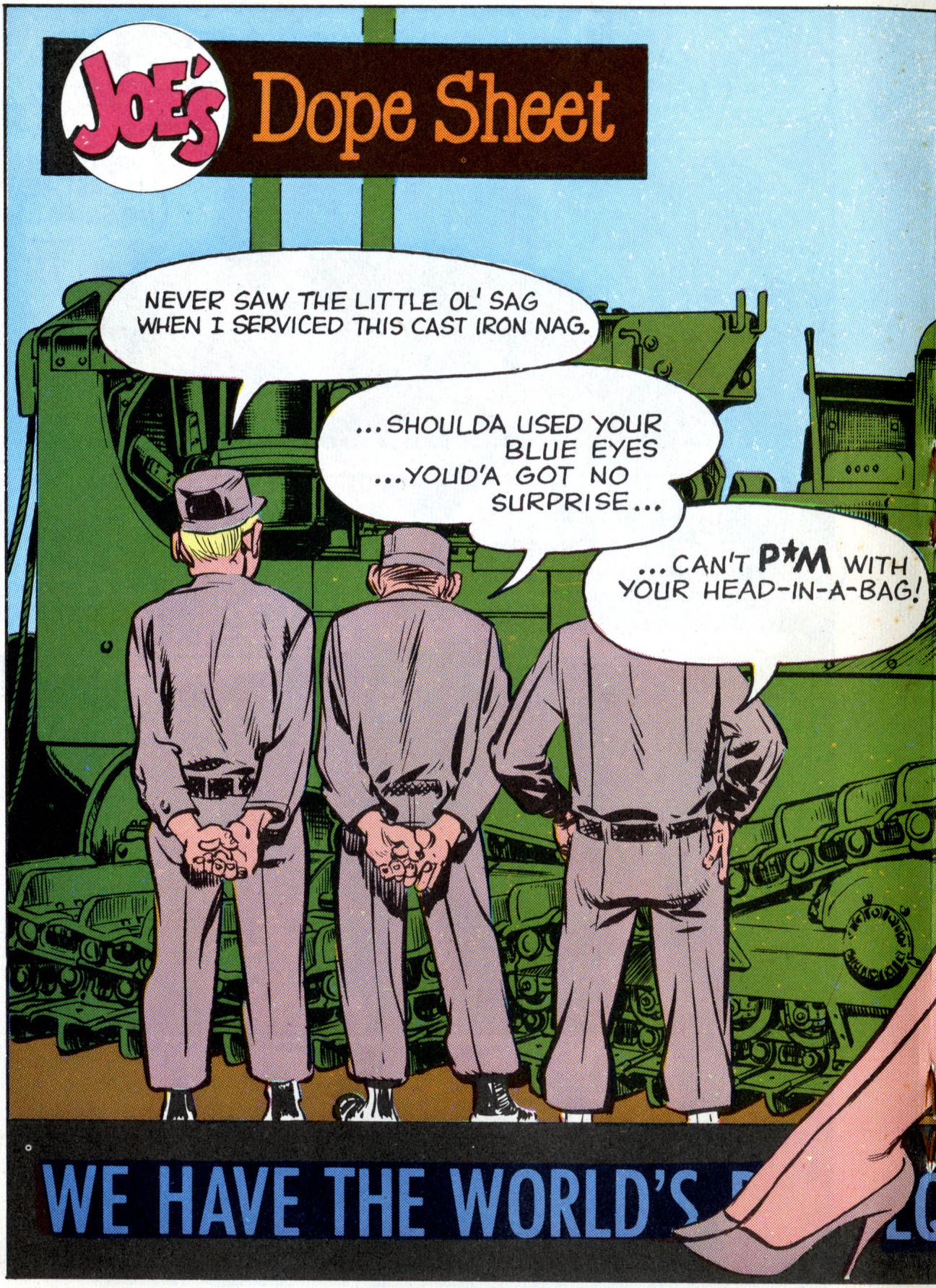
The tablets which have the shiny wrappers are the A (green top bottle) the I (orange top bottle), and the E (red top bottle).



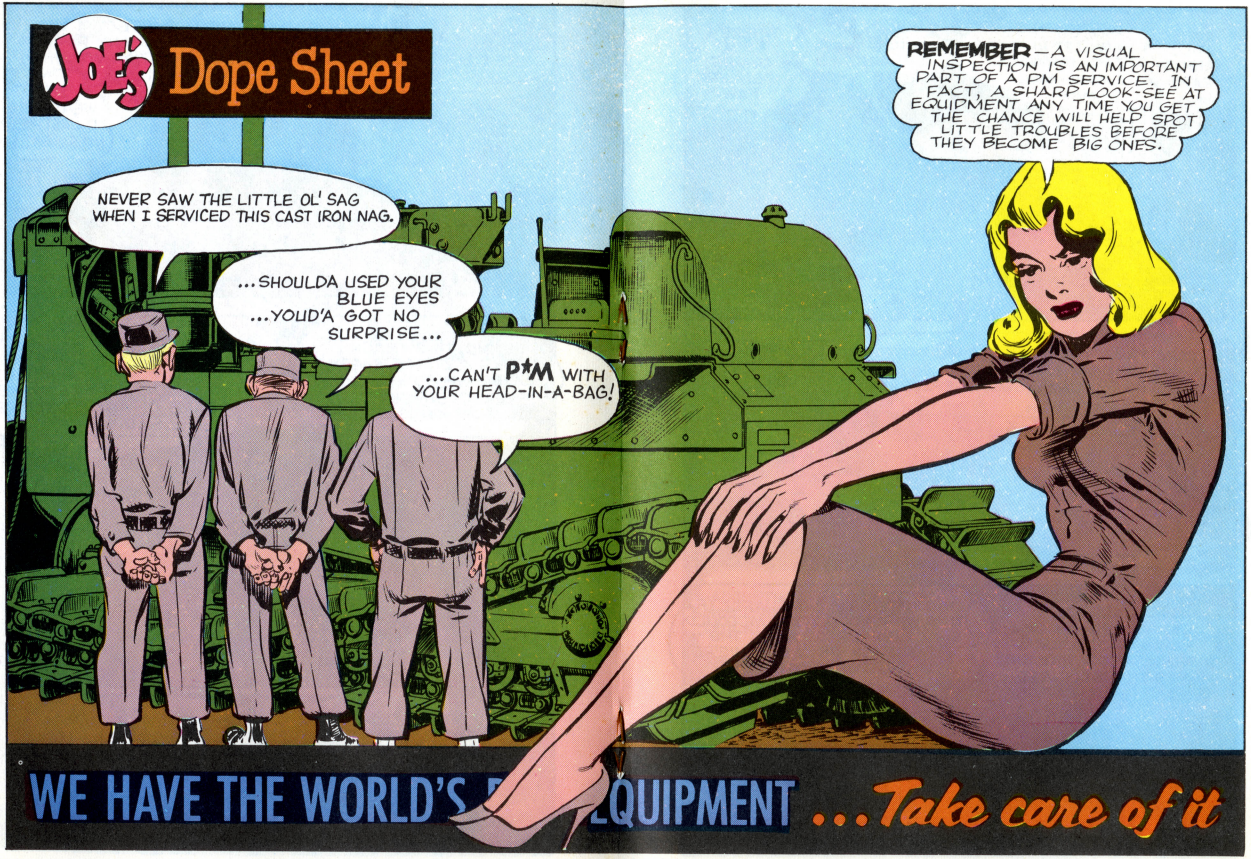

JOE'S
DOPE
It was a time of great trial... There was a blight upon the land, for there was no rain, nor were the crops full grown... and the people of Carbarn Valley spoke bitterly to the county agent saying... "if we are to grow great crops, why does not your weatherman send us rain?"
Wherefore, seeing their woe did he enjoin a meteorologist: "Seed some clouds and give our people rain"...
And... upon the Valley of Carbarn there fell... rain.
HOW LONG IT BEEN RAININ' MAW??
NIGH ONTO TEN DAYS AND TEN NIGHTS PAW!!
NOAH J. ARK
STOCK BREEDING A SPECIALTY


WOTCHA GONNA DO, PAW!
...BEEN DOIN', MAW!...
EZEKIEL
HOW'S THET THAR HOUSE BOAT COMIN'...
GOOD!! THEM DEPT. OF AGRICULTURE EXTENSION PLANS IS RAHT FINE.
HEPZEBAH
HOW FAST THET WATER RISIN'??
PURTY FURR, PAW... ALMOST UP TO MAH ELBOW NOW!
THAT SETTLES IT... GOTTA GIT HELP!
...HELLO, MABEL. GIT ME THE MILITARY POST H.Q. AT CARBARN CORNERS...
HELLO, CAPTAIN?? ...ZARK HERE!!!
...AND, IF A DOZER CAN GET IN AT THE FOOT OF THE VALLEY— PILE UP AN EMBANKMENT... OL' ZARK CAN HAVE ENOUGH TIME TO GET HIS FAMILY AND LIVESTOCK AFLOAT.

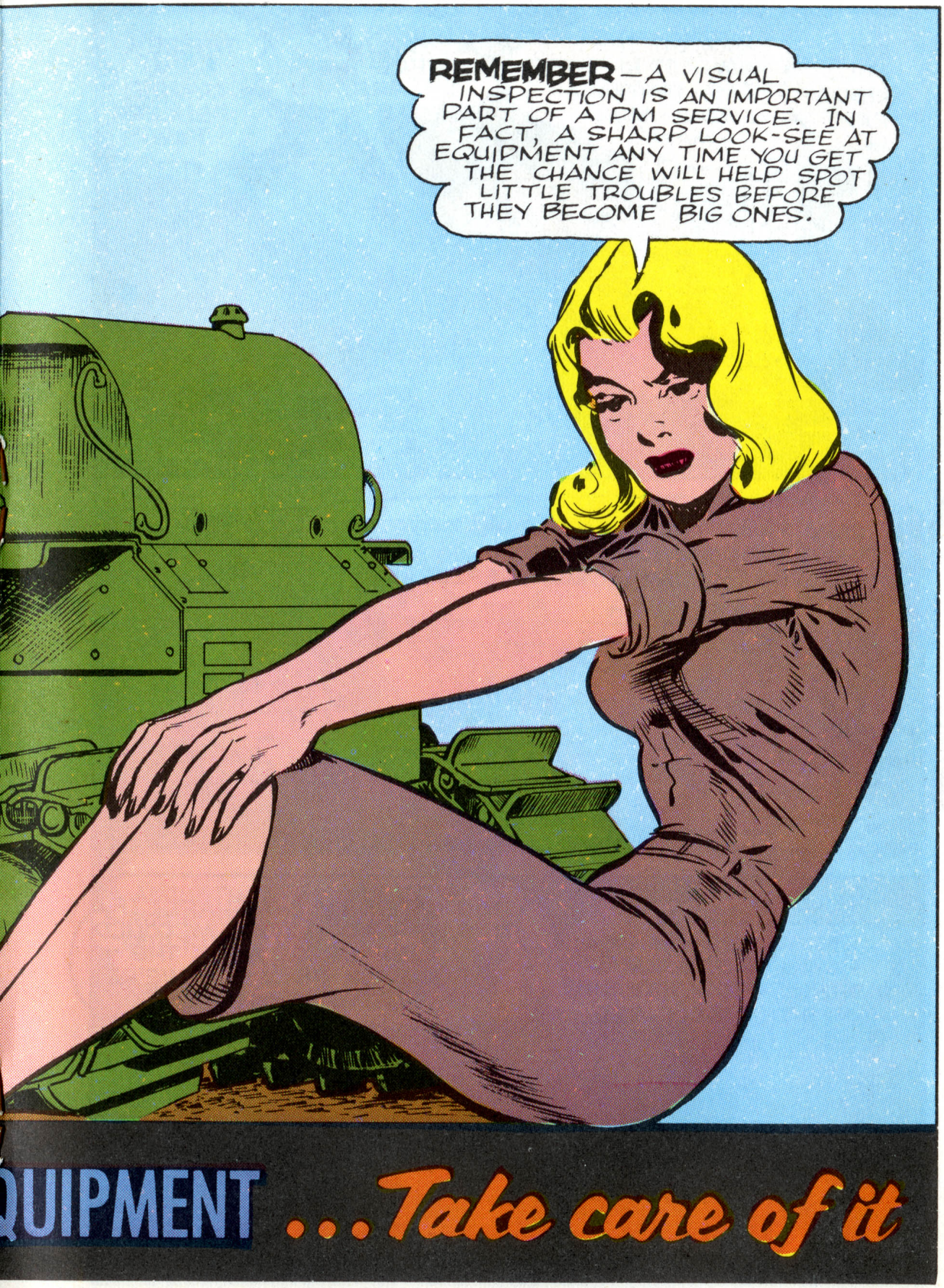
OKAY, CAMSHAFT AND SLIDEBUCKLE, GET GOIN'... TAKE THAT CAT D-8!
WE GOTTA DO ANY P.M. ON THIS MONSTER?
I WENT OVER IT LAST WEEK. NO SWEAT.
DUNNO, THIS TRACK LOOKS A LITTLE SAGGY... MAYBE WE OUGHTA LOOK 'ER OVER JUST...
KAAAMON!! SHE'S DUE FOR A Q SERVICE ON FRIDAY... THEY'LL TAKE CARE OF ANY PROBLEMS ...SADDLE UP!
I'D STILL FEEL BETTER IF WE'D CHECKED THAT TRACK!
LOOK, BUSTER... I DRIVE 'EM AND THAT'S ENOUGH! LET SOMEONE ELSE WORRY ABOUT P.M.



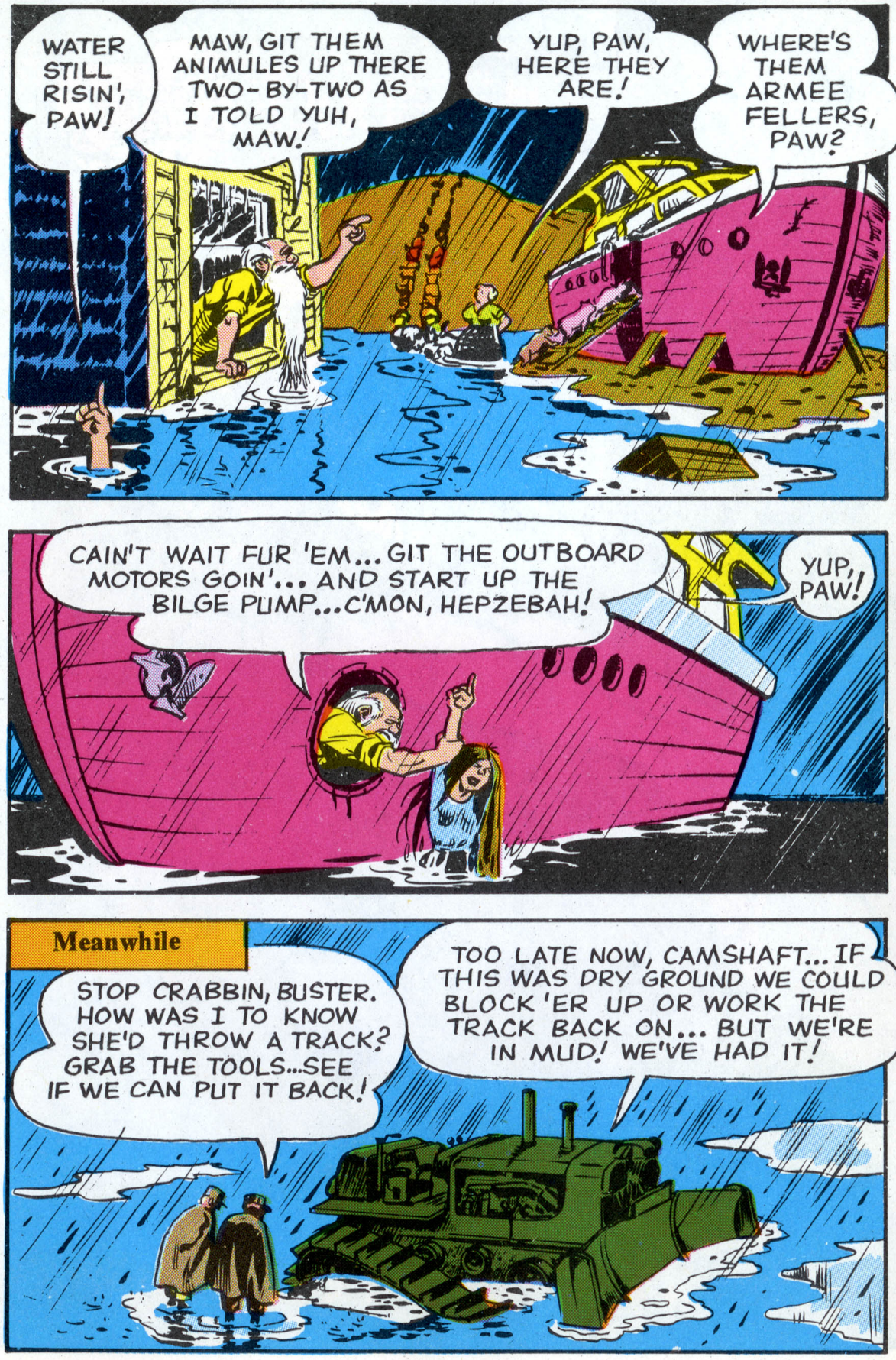

IF YOU WANT TO DISPLAY THIS CENTERPIECE ON YOUR BUL

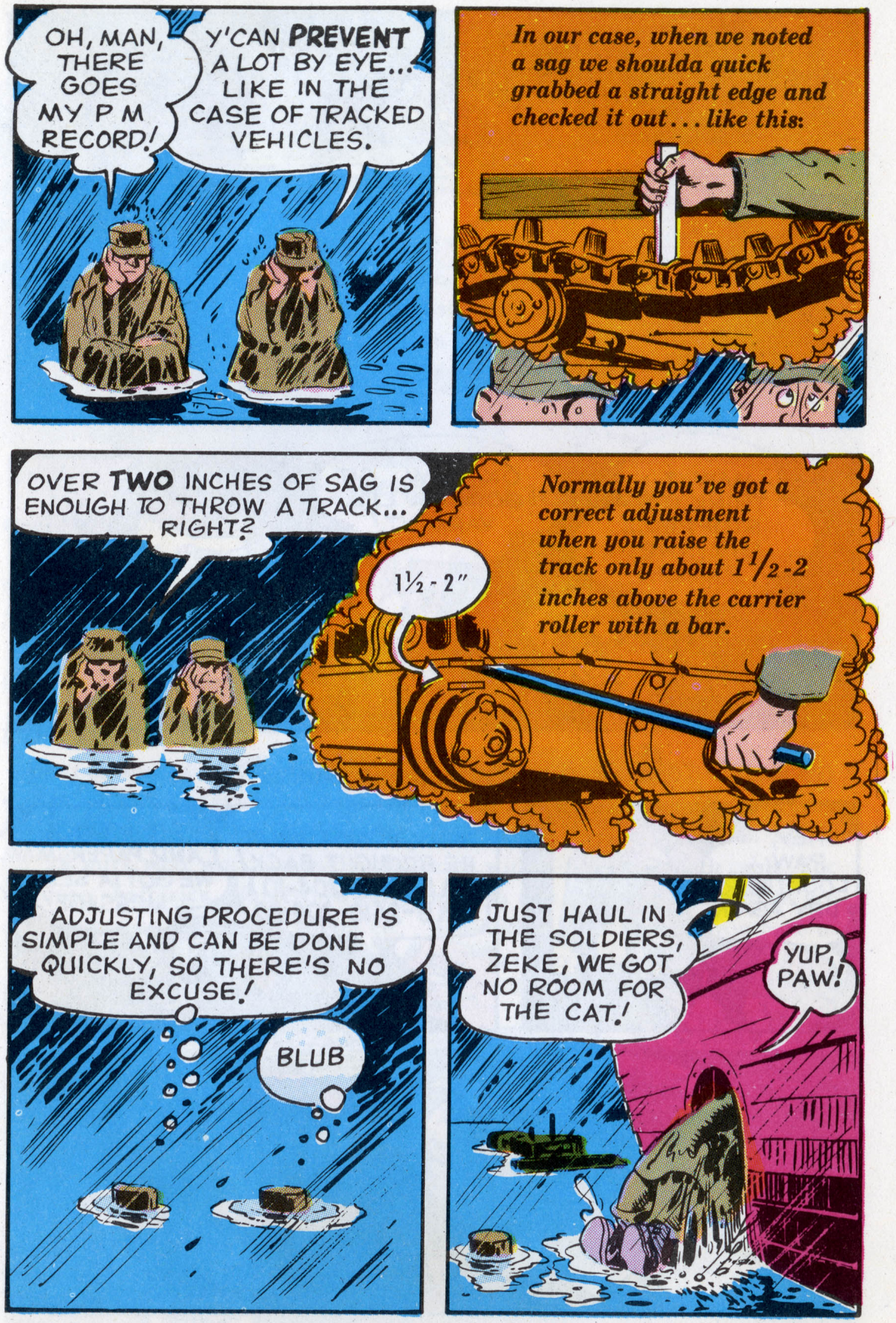


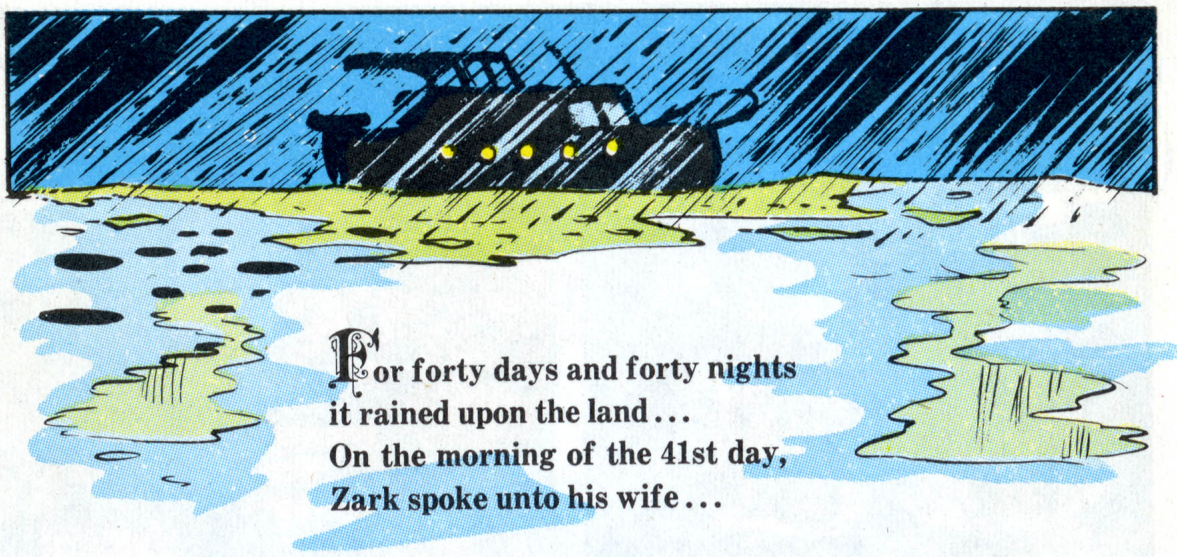

IF YOU WANT TO DISPLAY THIS CENTERPIECE ON YOUR BULLETIN BOARD, OPEN STAPLES, LIFT IT OUT AND PIN IT UP.



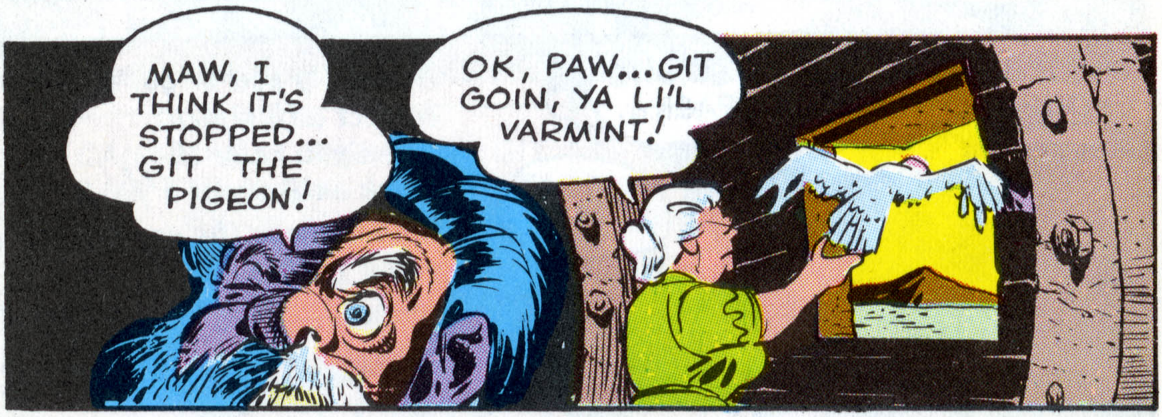

LLETIN BOARD, OPEN STAPLES, LIFT IT OUT AND PIN IT UP.


WATER STILL RISIN', PAW!
MAW, GIT THEM ANIMULES UP THERE TWO-BY-TWO AS I TOLD YUH, MAW!
YUP, PAW, HERE THEY ARE!
WHERE'S THEM ARMEE FELLERS, PAW?
CAIN'T WAIT FUR 'EM... GIT THE OUTBOARD MOTORS GOIN'... AND START UP THE BILGE PUMP... C'MON, HEPZEBAH!
YUP, PAW!
Meanwhile
STOP CRABBIN, BUSTER. HOW WAS I TO KNOW SHE'D THROW A TRACK? GRAB THE TOOLS... SEE IF WE CAN PUT IT BACK!
TOO LATE NOW, CAMSHAFT... IF THIS WAS DRY GROUND WE COULD BLOCK 'ER UP OR WORK THE TRACK BACK ON... BUT WE'RE IN MUD! WE'VE HAD IT!

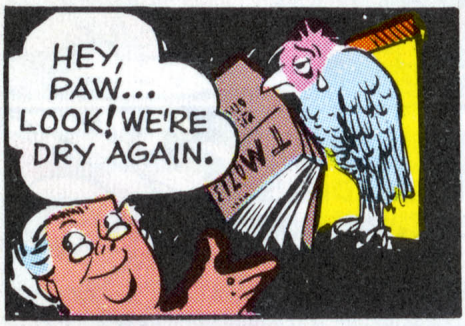

OH, MAN, THERE GOES MY P M RECORD!
Y'CAN PREVENT A LOT BY EYE... LIKE IN THE CASE OF TRACKED VEHICLES.
In our case, when we noted a sag we shoulda quick grabbed a straight edge and checked it out... like this:
OVER TWO INCHES OF SAG IS ENOUGH TO THROW A TRACK... RIGHT?
1½ - 2"
Normally you've got a correct adjustment when you raise the track only about 1 1/2 - 2 inches above the carrier roller with a bar.
ADJUSTING PROCEDURE IS SIMPLE AND CAN BE DONE QUICKLY, SO THERE'S NO EXCUSE!
BLUB
JUST HAUL IN THE SOLDIERS, ZEKE, WE GOT NO ROOM FOR THE CAT!
YUP, PAW!

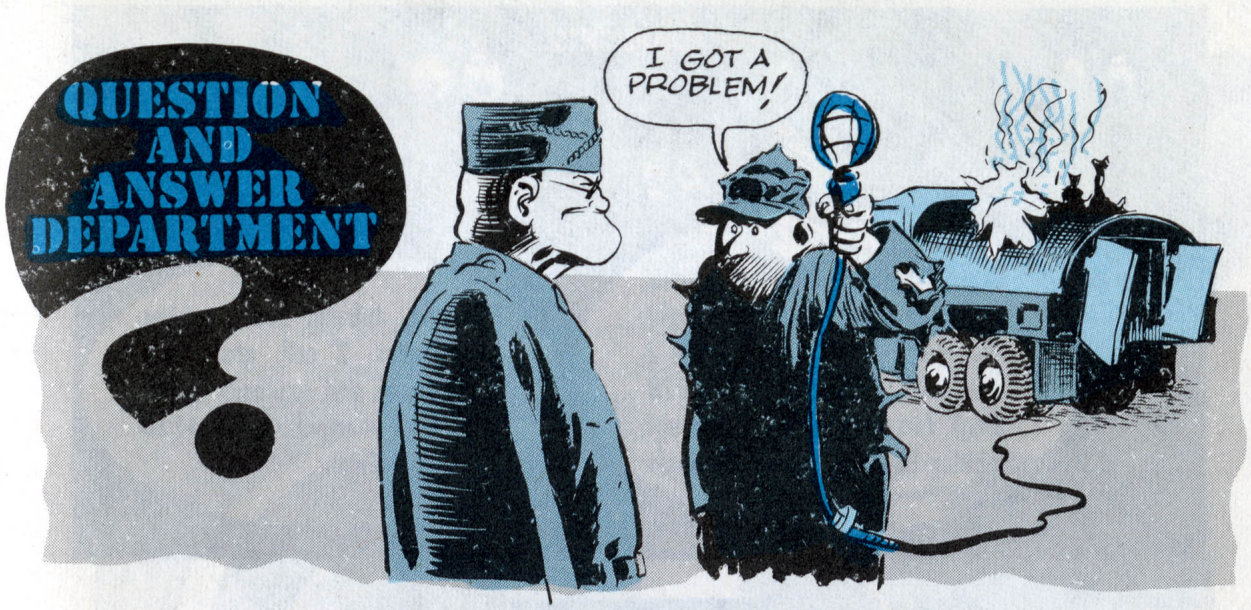


For forty days and forty nights
it rained upon the land...
On the morning of the 41st day,
Zark spoke unto his wife...




And at nightfall the pigeon returned...






## SPARK-PROOF LIGHTS

*Dear Half-Mast,*

*TM 10-1113 (Sept. 59) tells our fuel truck drivers to use an explosion-proof flashlight or extension light when eyeballing the insides of tanks or compartments for rust, etc.*

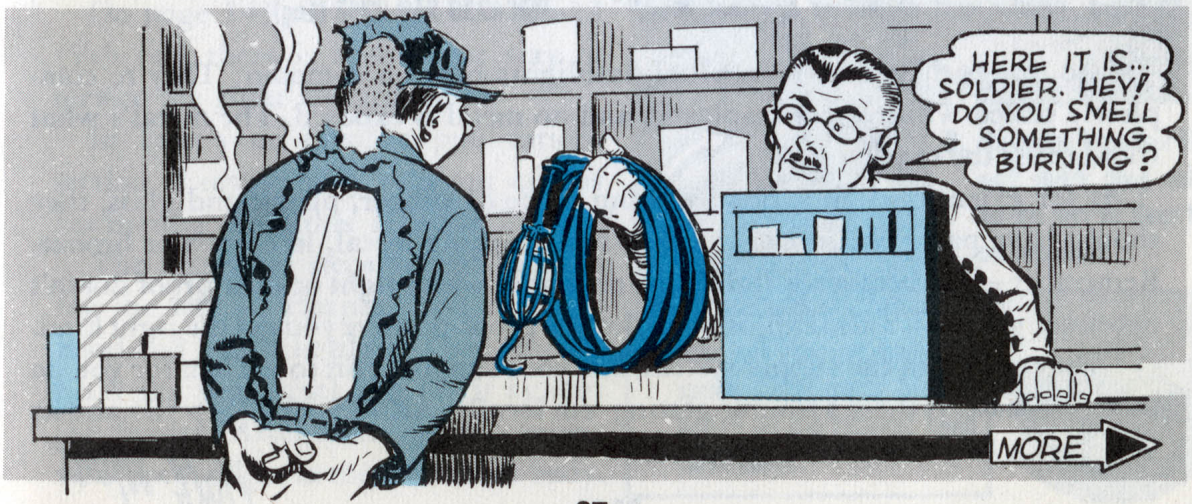
*Only trouble is, our TOE doesn't include a light of this kind. Where can we get one?*

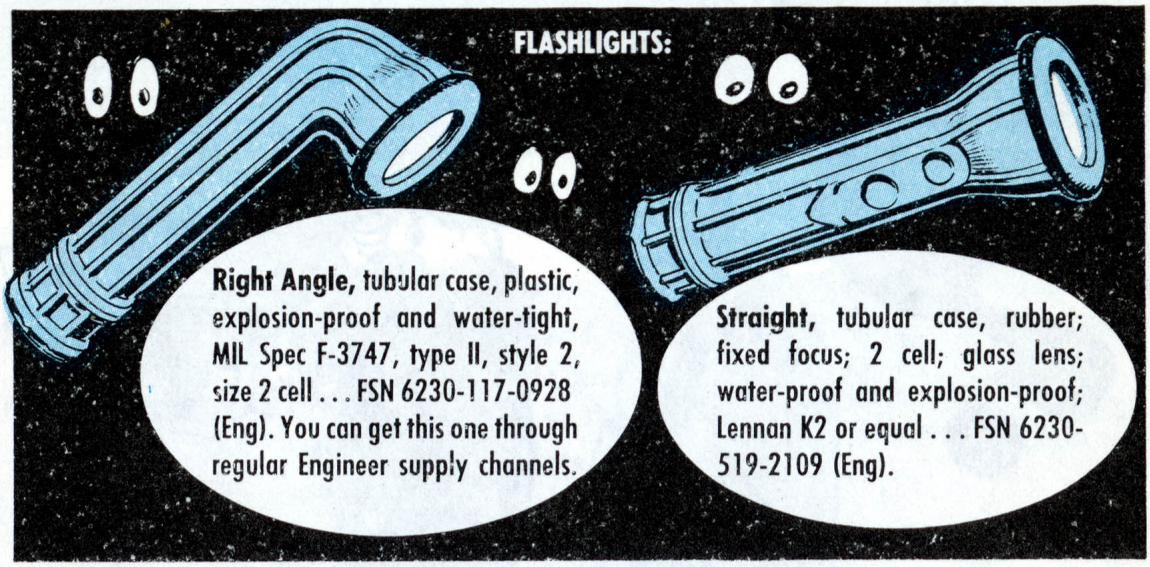
*Capt. P. J. B.*

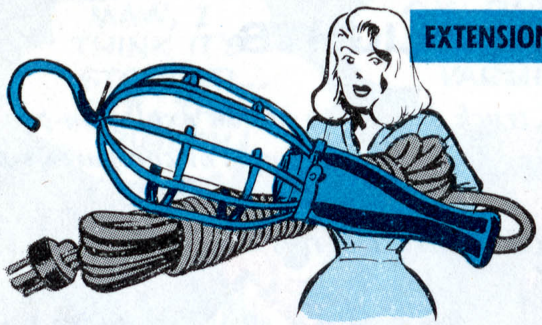
Dear Captain P. J. B.,

Getting and using the right explosion-proof flash and extension light can be pretty much a life and death matter for all guys who work around fuels, welding, batteries, flame-throwers, chemicals, missiles, aircraft, ammo, etc.

There're only two spark-proof flashlights listed in SM 5-5-6200 (June 60) and Change 1 (3 Oct 60). But there are four explosion-proof extension lights, each with a different length cable. The hitch is that five of these six items are non-stocked, which means you have to get 'em on local purchase.





## EXTENSION LIGHTS:

**5 ft SJ cable,** 2 conductor, oil and flame resistant, 2 flat contact screw cap plug connector one end; lampholder, guard, lens and rubber handle other end; 6-watt base lamp accommodated; explosion-proof, dust-proof; Eclipse Pioneer 1213441-1 or equal . . . FSN 6230-686-4874 (Eng).

**30 ft 16 AWG cable,** 3 conductor, oil resistant, 3 blade grounding plug connector one end; tubular cast aluminum housing, glass lens, guard, bronze hook and reflector other end; base lamp accommodated; dust and explosion-proof; Cml dwg E81-8-286 . . . FSN 6230-557-8762 (Eng).

**50 ft 16 AWG cable,** 3 conductor, oil resistant, type ST; 3 blade plug connector one end; lampholder, guard, hook and 30-in plastic handle other end; 25-watt intermediate screw base lamp accommodated; explosion-proof; Browne XP-25-H or equal . . . FSN 6230-643-1171 (Eng).

**100 ft 16 AWG cable,** 3 conductor, type SO; non-sparking metal guard, hook, glass globe, plastic handle and cable clamp; 100-watt A-21 medium screw base lamp accommodated; explosion-proof; MIL Spec L-4020, type N-1 . . . FSN 6230-268-9246 (Eng).

Two things these explosion-proof flashlights have in common: They're completely sealed with rubber or plastic, and no metal is exposed. The metal's what could cause the spark.

As for extension lights, besides being made of rubber, plastic and glass, they should have parts like screws made of non-sparking metal, like brass or bronze. Remember—just because a light's oil-resistant, water-tight or dust-proof doesn't necessarily mean it's also explosion-proof. Be proof-positive you get the right kind.

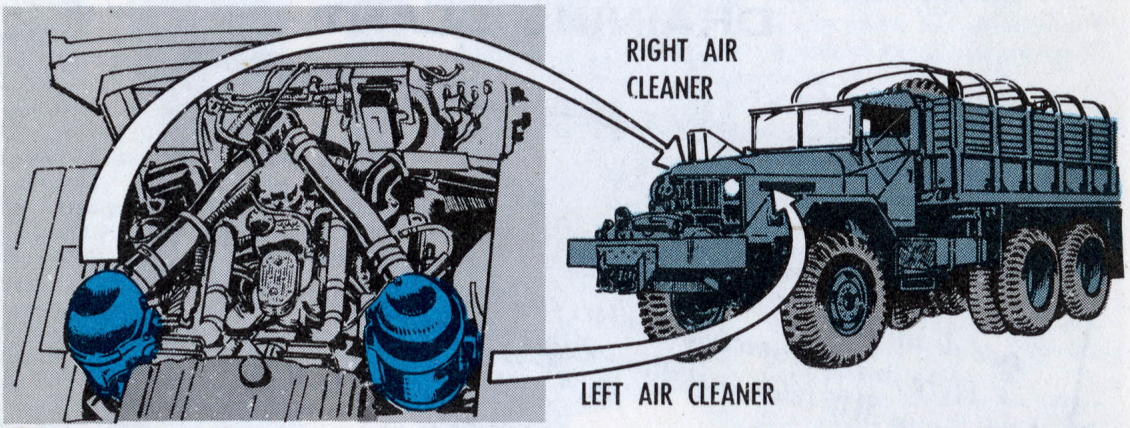
For items not in the supply system, ask your support unit to get 'em for you on local purchase. If there's trouble getting 'em locally, AR 715-30 (9 Sep 58) and its Change 1 (18 Jul 60) cover the deal.

*Half-Mast*

# 10-TON AIR CLEANERS

*Dear Half-Mast,*

*We are having a lot of trouble servicing the right air cleaner oil pan on our M125 10-ton cargo trucks because there is not enough clearance.*




*The left air cleaner is no problem. We clean it according to the method in TM 9-8002.*

*But the right air cleaner is something else again. It is wedged in there too tight for the oil pan to be removed like it says to in the TM.*

*Sgt B. J. A.*

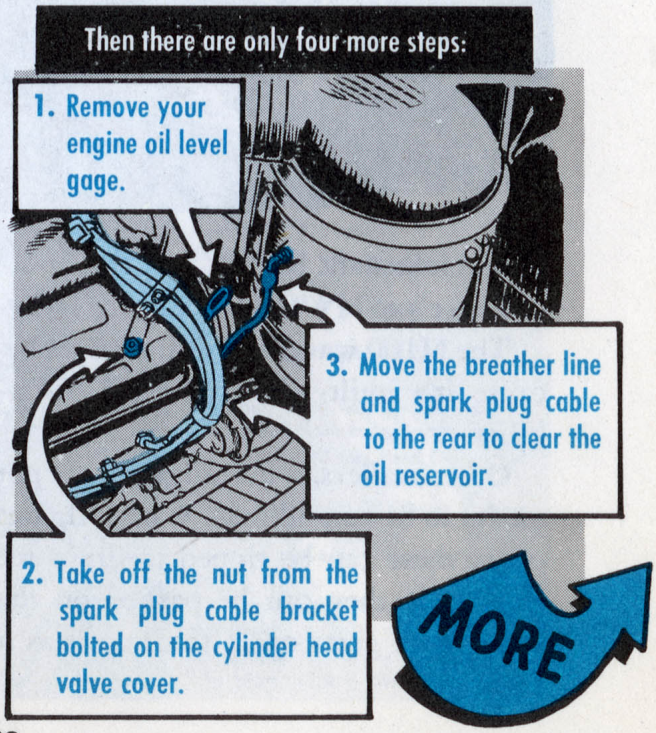
Dear Sergeant B. J. A.,

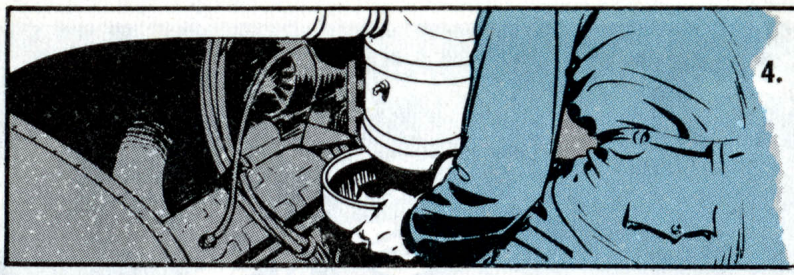
You're right as rain, Sarge. The only thing is, you're reading an out-of-date TM. The TM you should have is TM 9-2320-206-12 which superseded TM 9-8002 in February, 1960.

On page 143 of TM 9-2320-206-12 (Feb 60) there is a no-sweat way to service the right air cleaner.

In case your favorite publications section is temporarily sold out of this fascinating TM, this is what it says:

The first three steps are the same as for the left air cleaner. You raise the hood and lock it in place. Then you unhook the side panel and lay it against the fender. After that you disconnect all breather lines at the air cleaner body.





4. Support your oil reservoir while you unscrew the clamp bolt—move oil reservoir to the rear for clearance and lift out.

There it is, "All A-OK, all the way," like the man says.

Half-Mast

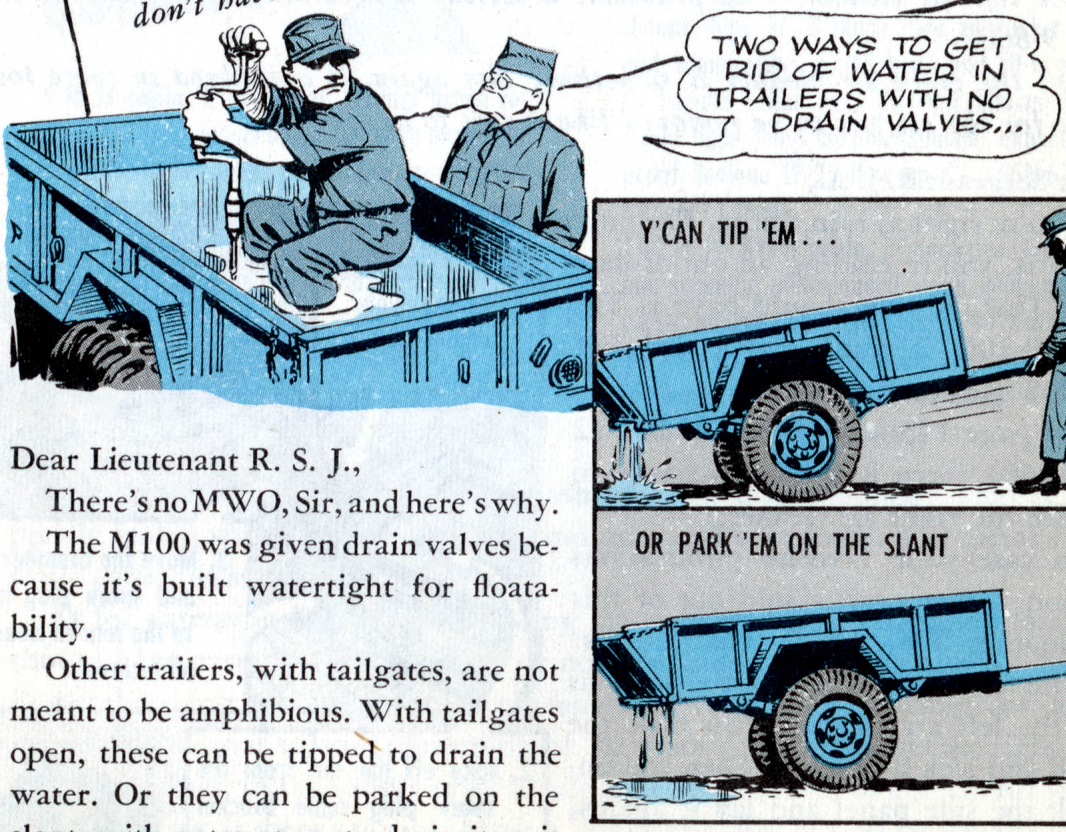
## DRAINING SLANT

*Dear Half-Mast,*

*I've noticed the M100 trailer, towed by the Jeep, has two drain plugs, but larger trailers don't.*

*Here in the tropics all trailers collect a lot of water. Is there an MWO on installing drain plugs in trailers that don't have them?*

*Lt R. S. J.*




Dear Lieutenant R. S. J.,

There's no MWO, Sir, and here's why.

The M100 was given drain valves because it's built watertight for floatability.

Other trailers, with tailgates, are not meant to be amphibious. With tailgates open, these can be tipped to drain the water. Or they can be parked on the slant, with gates open, to drain it as it falls.

Half-Mast

*A selected list of recent publications of interest to Organizational Maintenance Personnel. This is a list compiled from recent Adjutant General's Distribution Center Bulletins.*

## TECHNICAL MANUALS

**TM 1-1H-37A-4-20P** Jun

**TM 3-4240-201-20P** Jun Folter Unit, Gas Particulate, Hospital, M7A1

**TM 3-6665-208-12** May Indicator, Eyepiece Leakage, M2

**TM 5-2805-211-20P** May Eng (Cont Motors Mod MS-330)

**TM 5-3825-216-25P** May Sweeper, Rotary, Little Giant Mod ES-100C

**TM 5-3895-217-20, -20P** May Distributor, Liq Bit Mat Tankless Type: (Seaman-Gunnison Mod)

**TM 5-3895-242-12** Apr Drier-Mixer, Bituminous-Concrete Materials: Littleford Mod US-700-L

**TM 5-4310-220-20P** May Compressor, Rotary: 100 PSI Joy Mods RPA 210GD3-MS-1, RPA 210GD3-MS-2

**TM 5-4320-213-20P** May Pump, Cent Pet: Allis-Chalmers Mod 501-112-520

**TM 5-4320-220-25P** Jun Pump, Cent Barnes Model 10-MG

**TM 5-4330-200-25P** May Separator, Water, Warner Lewis Mod VFCS-1061-9A2ANW

**TM 5-5420-200-20P** Jun Launcher, M48A2 Tank Chassis Trans: For 63 Ft Bridge, Arm Veh Launched, Scissor Type C1 60

**TM 5-6115-236-25P** May Gen Set, 2 KW, DC, 12V, US Motors Mod 2 US-17421 Mod 2 US-18086

**TM 5-6115-203-20P** May Gen Set, Elec 100 KW, International-Fermont Mod M-100-DM6

**TM 5-6115-240-20P** May Gen Set, Cummins Mod JS-6-G 45 KW-400 Cycle

**TM 5-6115-248-10** Jun Generator Set, Diesel Engine; 30 KW, U.S. Motors Mod 30-US-16936

**TM 5-6115-301-10** May Gen Set, Diesel, 45 KW, Hollingsworth Mod JHDX45A

**TM 5-6665-201-20P** Jun Mine Detector Set: Battery Powered; AN/PRS-3, -3A1, -3B, -3C, -3D

**TM 5-6675-205-15, -25P** May Theodolite: Directional; Wild Heerbrugg Mod T-2-56-C-MIL, Mod T-2-56-M-MIL

**TM 5-6675-208-15** May Frame, Stereoplotter Projection, Bausch & Lomb Mod 53-90-90

**TM 5-6675-209-15** May Tracing Table, Stereoplotter, Projection: Bausch & Lomb Mod 53-14-94

**TM 5-6675-214-15P** May Alidade, Surveying: White Mod 9082

**TM 5-6675-215-15P** May Level Surveying: White Mod 7080A

**TM 5-6675-216-15P** May Transit: White Mod 7012 and 7012A

**TM 9-1005-223-12** May 7.62mm Rifle M14

**TM 9-1055-208-12, -20P** Jun Trailer Mtd 762-MM Rkt-Htlg Units M405 and M405A1

**TM 9-1220-223-15** May Plotting Board M17

**TM 9-1305-200** Jun Small Arms Ammunition

**TM 9-1430-250-20P/1, /7, /8** May Hercules

**TM 9-1430-406-20P** May LaCrosse

**TM 9-1430-510-20P** Apr Chassis, Trailer, XM514 (Hawk)

**TM 9-1440-250-20P/3, /6** Jun Rail, Missile XM3 Nike (Herc)

**TM 9-2330-255-24P** Jun Trailer, Low Bed, XM529

**TM 9-6930-411-12** May Lacrosse Trajectory Safety

**TM 10-3930-218-10** Jun Rough Terrain Crane Attachment, Garwood

**TM 10-3950-202-20, C2,** Apr Hughes-Keenan Crane

**TM 11-5805-284-25P** May Cent Office, Telephone, Manual AN/MTC-1

**TM 11-5805-288-15** May Central Office Telephone Manual AN/MTC-9

**TM 11-5820-353-25P** Apr Radio Receiving Set AN/MRR-8

**TM 11-5820-440-20P** May Remote Control Equip AN/TRA-2 and AN/TRA-2A

**TM 11-5821-236-15P** May Control, Radio Set C-1114/ARC

**TM 11-5830-221-12** Jun Intercommunication Stations LS-147A/FI, B, C, D

**TM 11-5840-225-20P** May Radar Modulator MD-144/TPS-1D and MD-144A/TPS-1D

**TM 11-5895-224-15** May Operations Cent AN/MSC-32

**TM 11-5895-291-25** May Operations Central AN/TSQ-38 and Coder-Decoder Group OA-2789/TSQ-38

**TM 11-6125-216-12P** Jun PU-503/MPQ-4A and Control, Motor Gen C-3460/MPQ-4A

**TM 11-6625-326-12P** Jun Analyzer, Spectrum AN/UPM-110

**TM 11-6625-346-12** Jun Indicator, Distortion ME-153/U

**TM 11-6720-207-20** May Camera, Still Picture KA-39A

**TM 11-6720-213-20** May Camera Set, Still Picture KS-19A2

**TM 11-6740-232-15P** May Editor, Motion Picture Film ES-21 (1)

**TM 11-6740-241-10** Jun Operator's Manual for Editor, Motion Picture film ES-21 (2)

**TM 55-1510-202-10, -20** Apr L-19

**TM 55-2210-211-20P** May Loco, Dies Elec, 127 Ton and 131 Ton, Mod 539S, American Locomotive Co

## LUBRICATION ORDERS

**LO 5-3820-205-20/2-3** Jun Crusher, Jaw: Eagle Crosher Mod 5157

**LO 5-3820-208-20** Jun Drilling Machine, Buffalo-Springfield Mod 71SK-B

**LO 5-3910-202-15** May Conveyor, Belt: Barber-Greene Mod PG 70

**LO 5-5420-200-12** Jun Launcher, M48A22 Tank Chassis, Trans: For 64 Ft Bridge Unit Rig & Equip Mods AV148A2 & AVLB48A2

**LO 5-6115-302-20** May Gen Set, Diesel Eng: 45 KW, AC, Harnischfeger Mod 400A

**LO 9-1430-253-20A** May Missile Tr Ant-Rec-Trans Gp MPA

**LO 9-1430-253-20/3A** Apr HIPAR Ant Gp

**LO 10-3930-224-20** Apr Truck, Lift, Fork, Yale Mod G54P-4024-RS Army Mod MHE 166

## TECHNICAL BULLETINS

**TB AVN 23-5-1, C6,** May UR Digest

**TB AVN 23-62** Jul Uses and Grades A/C Eng Oils

**TB AVN 23-63** May A/C Fire Fighting and Rescue

## MISCELLANEOUS

**MWO 5-3805-207-35/1** Jun Mod of Loader Clark Mods 85-AM & 85-AM-23

**MWO 9-1430-502-20/11** Jun Radar Set AN/MPQ-35: Inst of Cor Ident Plates (Hawk)

**MWO 9-2300-249-10** Jun 90-MM Gun Tanks, M48, M48A1, M48A2, & M48A2C: Cam & Des Plate to Ball Comp

**MWO 9-2320-213-20/1** Jun Carrier, M274 Steering Quick-Pin Assy & Gear Shift Lever Brackets

**MWO 9-2330-212-20/4** Jun Trailers Van; Install of Air Conditioner, (Herc)

**MWO 10-3930-212-30/1** Jun Lift, Fork, Rough Terrain, 6,000 Lb; Fork Anchor, Battery Cover, Switch Levers, Hydraulic Tank Baffle and Cage

**SM 5-4-5610-513** May Water Purif Equip Set: 600 Gal per Hr, Trailer Mtd

**SM 10-1-C6-5-SL, Vol 1,** May Hand Tools, Nonedged, Nonpowered, Stock List Vol 1

**SM 10-1-C6-5-SL, Vol 3,** May Hand Tools, Nonedged, Nonpowered, Stock List Vol 3

**SM 10-1-C6-7-SL** Jun Sets, Kits and Outfits of Hand Tools

**SB 5-110** May Wght, Cub and Trans Data for Eng TOE Units

**SB 9-203** Jul Proc and Insta of Directional Signal Lights

**AR 750-2300-7** Jun Exp Lts for Tactical Trans Vehicles

**DA Form 9-52** Apr Corporal II Calibration Data Sheet

**DA Form 9-97** May Ni-Herc Monthly Check Sheet Track Radar Systems

**DA Form 9-118** Mar Herc Check Sheet for Missile Electrical Checkout

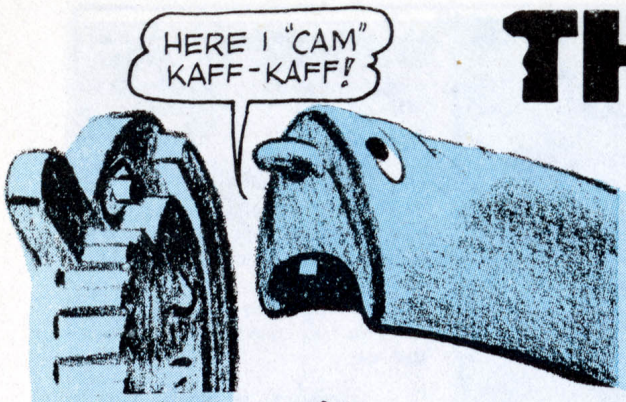
**DA Cir 310-52** Jul Distribution of Army Aviation Literature

**DA Pam 310-4** May Index-TM's, TB's, etc.

**DD Form 780 (U-1A)** Jul Aircraft Inventory Record

**DA Circular 750-2** July Replacement of Parts which fail (Eng Equip)

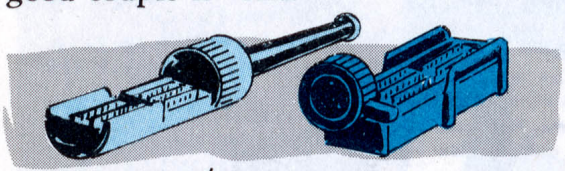
# THE CAM



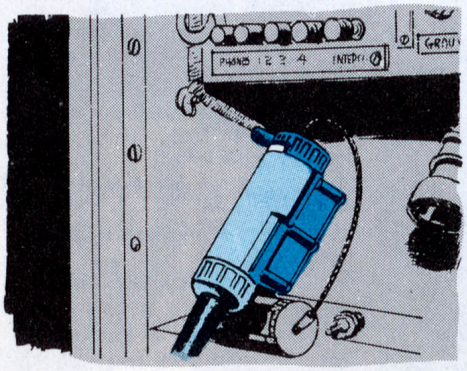

So what's a cam?

Well, most dictionaries agree a cam is "a curved wedge . . . used for forcing two pieces together". Interesting.

And the two pieces trying to get together—in this case—are those 26-pair connectors that keep your telephone and telegraph cables coupled when a good couple is vital.



The U-187/G receptacle connectors are snuggled right on the outer wall of the comm shelter itself, and there's a U-185A/G plug connector at each end of each length of cable.



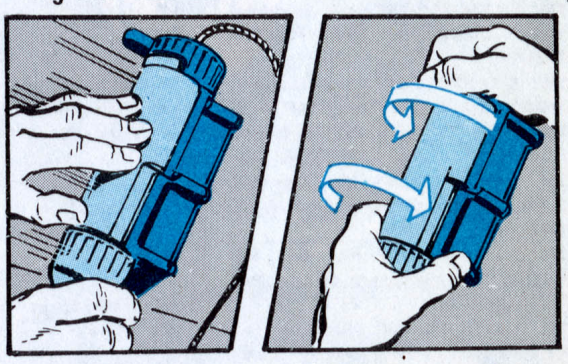
They're a familiar sight at any manual telephone central office MTC-3, manual telephone central office AN/MTC-7, telegraph terminal AN/MSC-29, teletypewriter central office AN/MCC-17, and all the rest.

But it seems there's a knack in coupling and uncoupling these connectors which not only makes the whole operation a cinch, but also prevents those contacts on the contact blocks from being bent, broken, or buggered up.

That knack, in a word or two, is cam action.

## COUPLING

**Next time you're ready to hook up, touch the two connectors together face-to-face. That'll line up the two contact blocks evenly. Press 'em together to sort of "start" the two blocks together. And then complete the mating with cam action.**



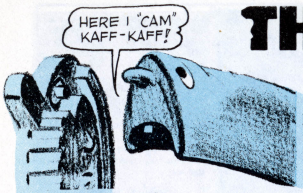
You may have to ripple a muscle or two when you tighten up, because the contact blocks have to be a tight fit so's to guarantee good electrical contact. But that cam action (using two curved wedges to force two pieces together) will seat the blocks snug and secure without damaging the contacts.

This combination of the face-to-face approach plus firm cam action is guaranteed to produce the desired results.

## UNCOUPLING

When the word comes down to uncouple and move out pronto, a quick

# THE CAM

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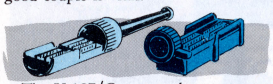

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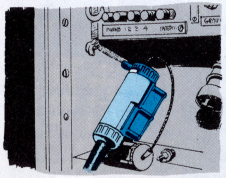

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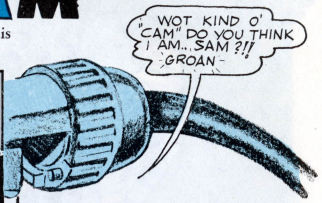
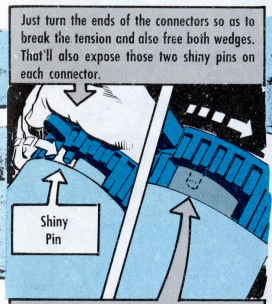
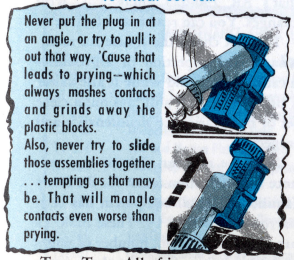
# WHAT AM I




## A COUPLE OF THINGS TO WATCH OUT FOR:




True. True. All of it.

But how does it all help a man whose connector already suffers from some mashed contacts? Some say the whole connector is lost if even one or two contacts are damaged.

Tain't necessarily so.

Take a look at that U-185 or U-187. If the contacts aren't damaged enough to prevent it from being satisfactorily coupled with another—keep it on the line.

If some contacts **are** damaged so much that the connector can't be coupled with another, there's still more than an even chance it can continue to carry the message.

Consider that buggered contact as a bad tooth that has to come out. One quick yank with a pair of needle-nose pliers will do the job. And unless the companion contacts on this, or mating connector, are damaged—you'll still have continuity on that line. You'll still have communication.

And there's good word on the wire, too, that every connector soon will carry a built-in guarantee of mating ease. It's a new contact block complete with sheltered contacts that are practically damage-proof. Any time, now.

Meantime, keep the cam in action next time you couple or uncouple.

# WHAT AM

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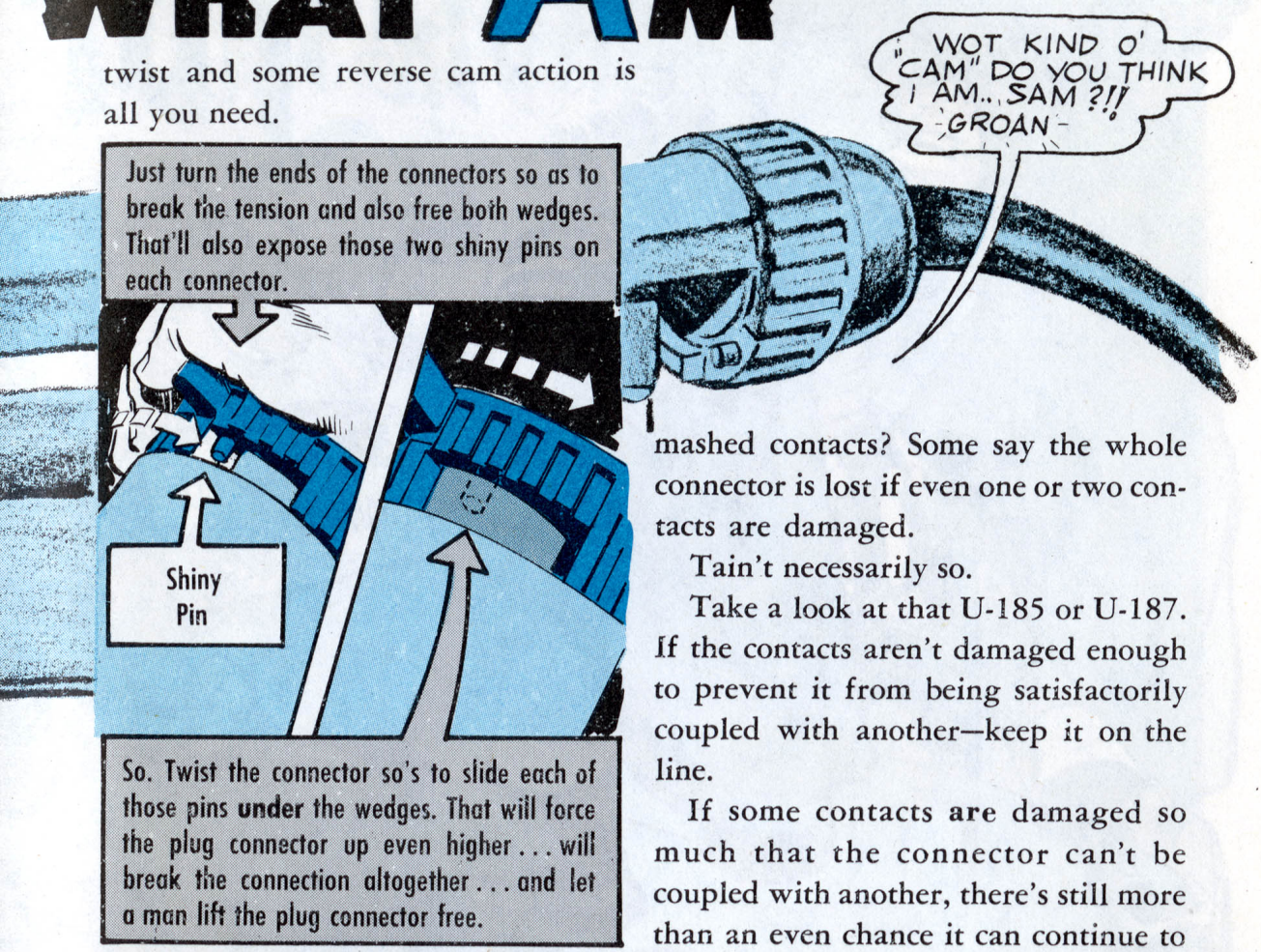


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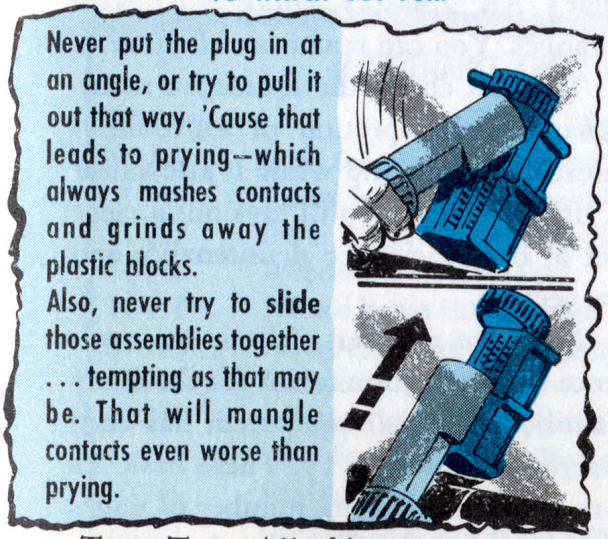


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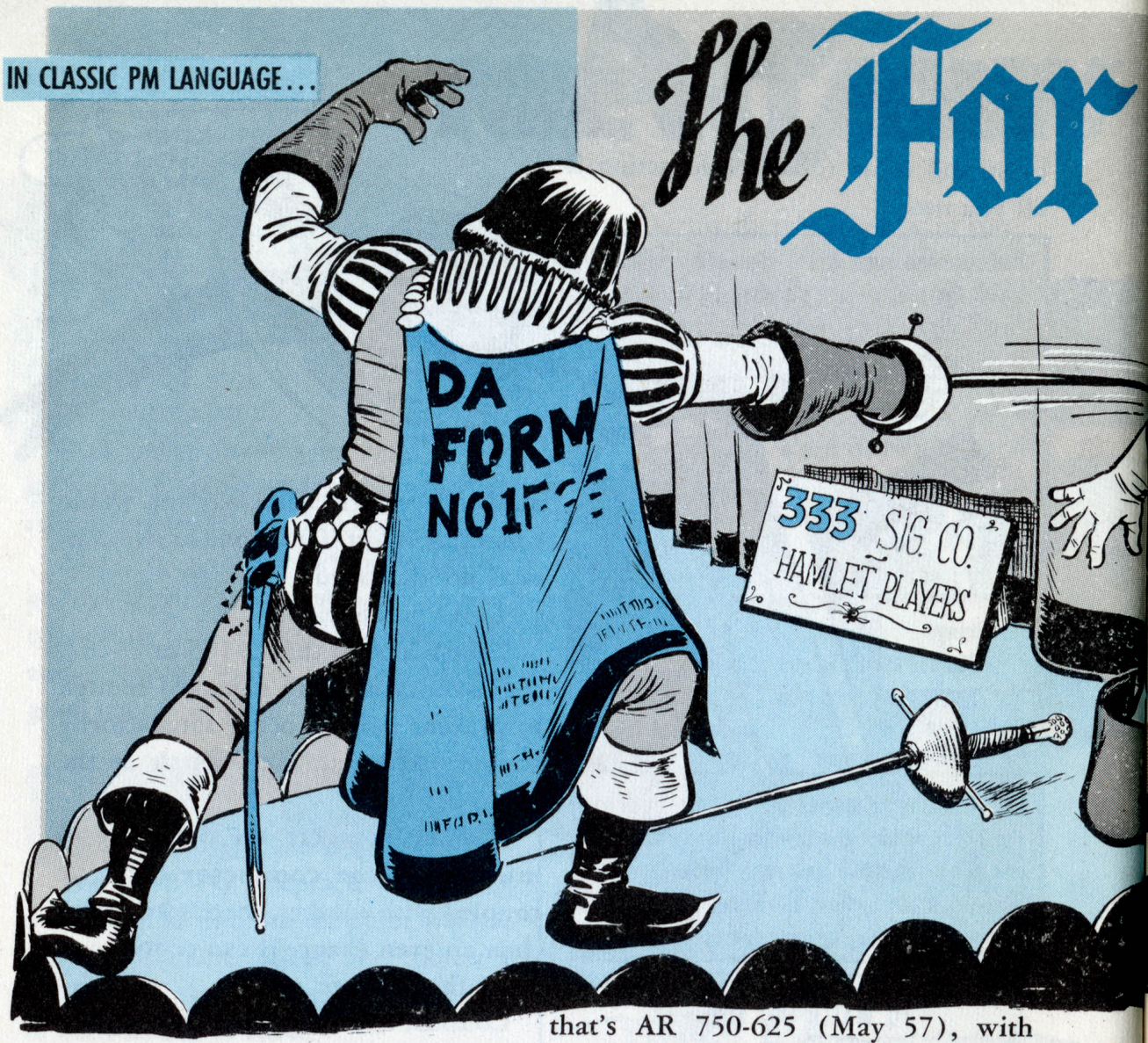



Peculiar. Unique. Tailor-made. Off-beat.

Take your pick—or even add a few yourself. They can all be used to describe the preventive maintenance forms set-up for Signal Corps equipment.

Which is maybe why some gents find it a mighty useful system—while others consider it a little more confusin' than amusin'. All depends, mostly, on how you approach the situation.

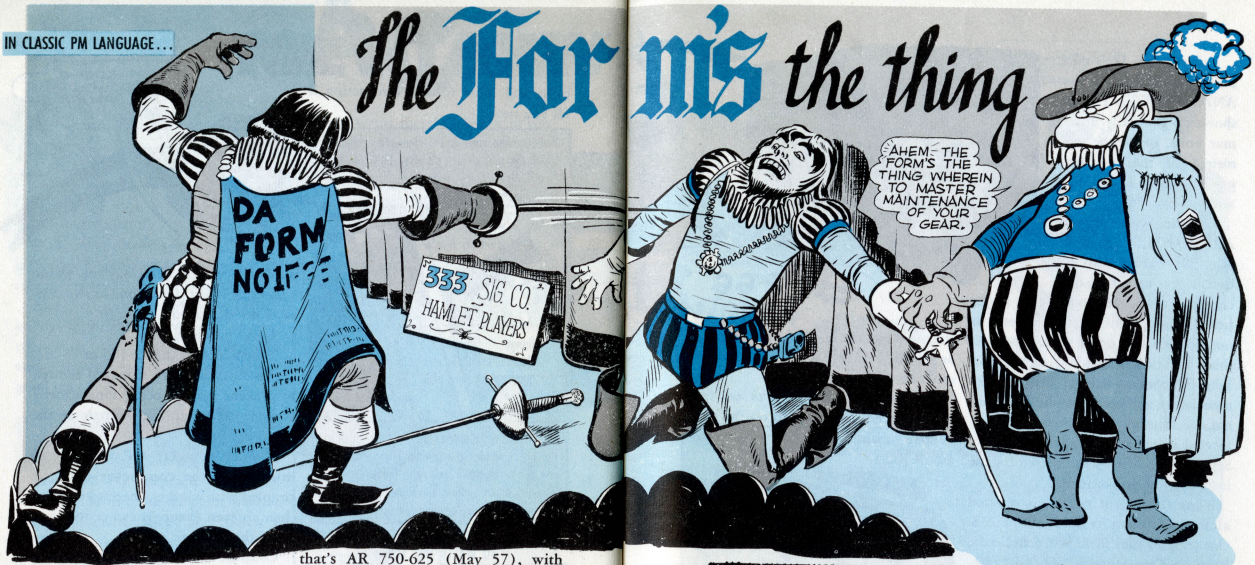
Since there's no maintenance "bible" on Signal Corps equipment, probably the best and only way to approach the problem is right on frequency. And that's AR 750-625 (May 57), with changes. You can read it and believe it.

This AR charts the course for maintenance and inspection of all communications gear. And while it allows for a little drifting, it still lays out a clear set of boundaries for maintenance and inspection.

Now the number of basic maintenance and inspection forms for the many families of Signal equipment has been narrowed down to 11. These basic 11 are identical in form, number of pages and instructions. Only the check items themselves are different, depending on the kind of equipment covered.

IN CLASSIC PM LANGUAGE...

# The Form's the thing

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| DA Form | Equipment |
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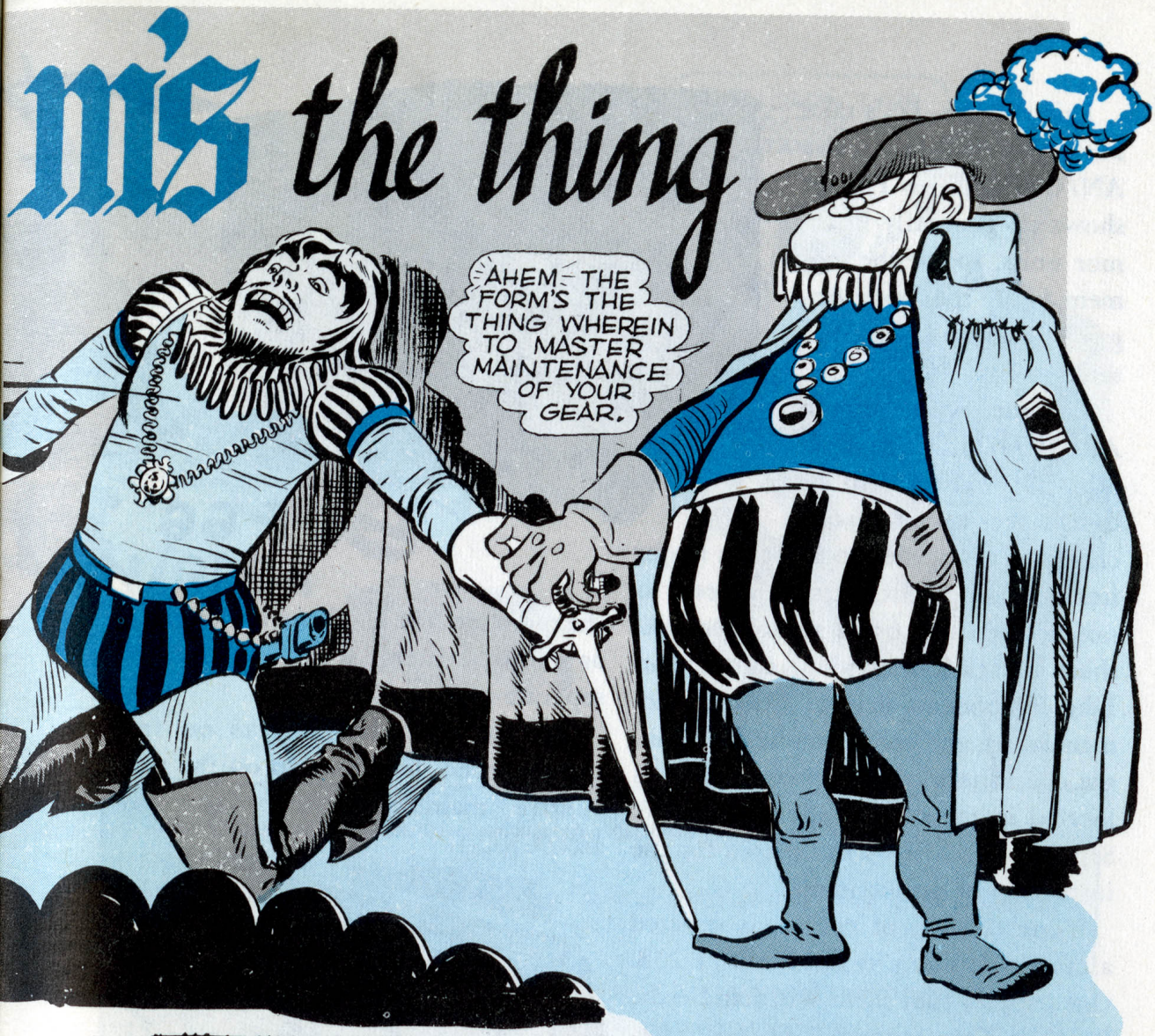
| 11-242 | Manual Telephone and Telegraph Central Offices |
| 11-267 | Engine-Generator Sets and Reel Units, Engine Driven |
| 11-246 | Telephone Switchboard-Field |
| 11-254 | Still and Motion Picture Camera |
| 11-256 | Photographic Developer, Projector, Dryer, Contact and Projection Equipment |
| 11-252 | Teletypewriter |
| 11-240 | Telephone Set, Handset, Headset and Chestset |
| 11-238 | Sound Equipment, Radio, Direction Finding, Radar, Carrier Radiosonde and Television |
| 11-266 | Test Equipment |
| 11-181 | Communication Security Equipment |

"So, gimme a f'rinstance," you say.

more

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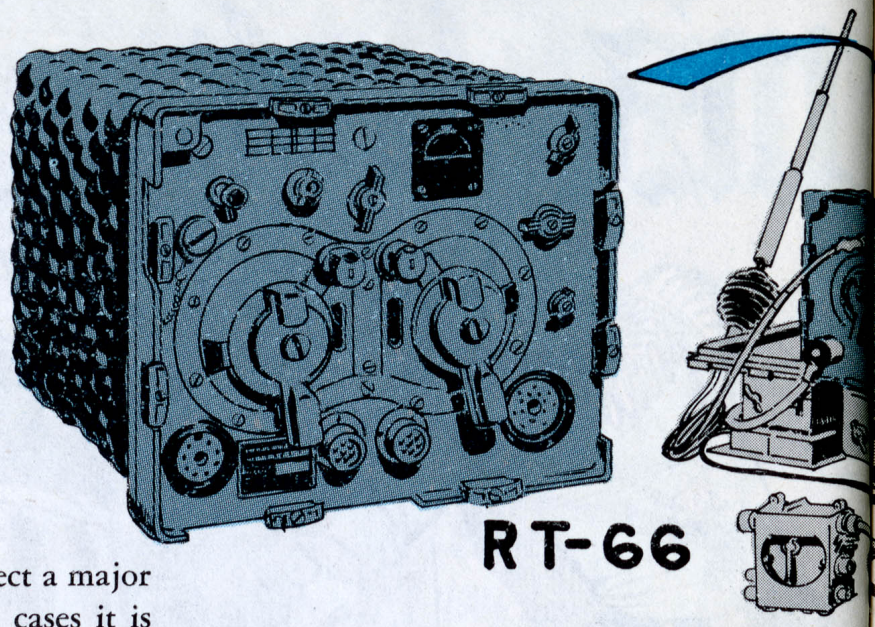



Fair enough. Let's take an old reliable . . . the AN/GRC-4. This FM set shows up generally in armor units, so for the moment figure that your Angry 4 is set up in an M48 tank.

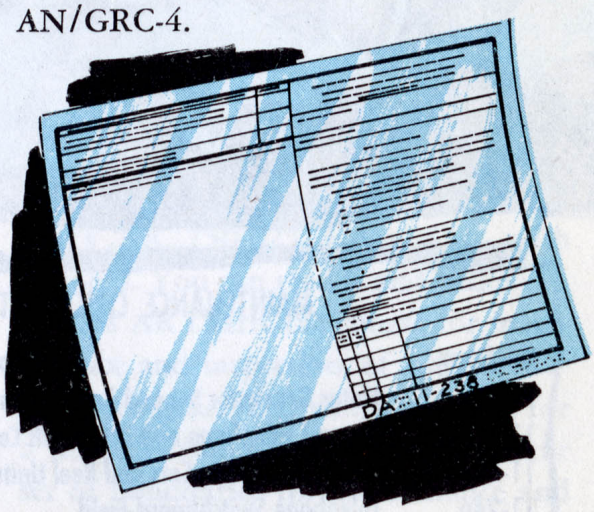
Like the "word" says in AR 750-625, Change 2, Sept 59: "There will be cases where more than one checksheet is needed to inspect a major item of equipment. In such cases it is not necessary to use a separate checksheet for each individual component. Like components may be listed by nomenclature and serial number on a single checksheet when the equipment is located in the same shelter or vehicle. Separate checklists will be used for the inspection of unlike items".

Your GRC-4, of course, is covered almost exclusively by DA Form 11-238. One copy of that form will handle the Receiver-Transmitter RT-66/GRC; Receiver-Transmitter RT-70/GRC: AF Amplifier AM-65/GRC; Power Supply PP-281/GRC; Power Supply PP-109/GRC and Control C-435/GRC.

When a single form is used this way, the "Equipment Nomenclature" block will first show the set type number—followed by the type numbers of each major component. It follows, of course, that the "Equipment Serial Number" block will be completed to corresponding sequence.

The only other form needed would be a DA 11-240, which tells the story on the H-33/PT Handset used with the radio set. The H-33 can be described as an "unlike item" which rates its own separate type of form.

To put the whole works on frequency, then, let's tune in on the preventive maintenance story for our AN/GRC-4.




First, you, the operator. . . .

You'll have your copy of the DA Form 11-238 to use and re-use—both for daily and weekly checks. It will last (and be current) for one full month. And it will show the maintenance history for that GRC-4 on a demand basis since the copy of the form will stay with the set wherever it goes.

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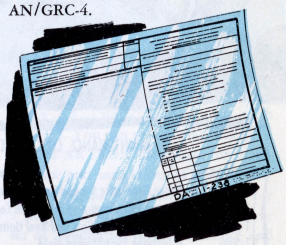


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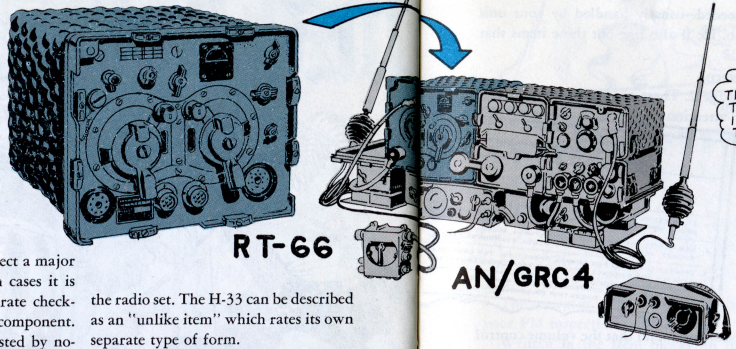


(Note: In addition to this current, working copy, the latest **completed** form showing completed inspections will be retained in a unit's files).
So, if you're the operator (tank loader in this case) here's generally how you'll handle an 11-238 for one month of maintenance . . .

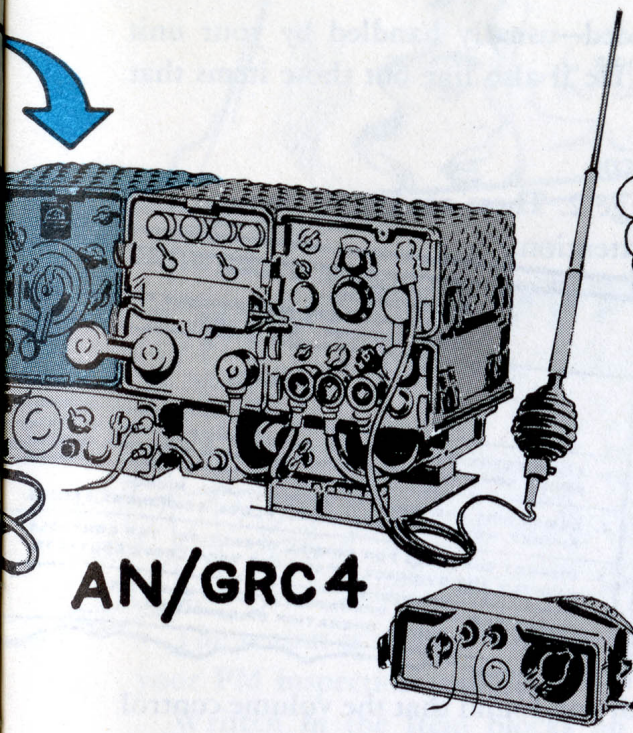
First thing on a fresh form, of course, are the nomenclatures and serial numbers of the equipments—on page 1.

**MAINTENANCE CHECK LIST FOR SIGNAL EQUIPMENT**
**SOUND EQUIPMENT, RADIO, DIRECTION FINDING RADAR, CARRIER, RADIOSONDE AND TELEVISION**
*(AR 750-625)*

| EQUIPMENT NOMENCLATURE | RT-66/GRC<br>RT-70/GRC | AM-65/GRC<br>PP-881/GR | PP-109/GRC<br>C-435/GRC |
|---|---|---|---|
| AN/GRC-4 | | | |
| EQUIPMENT SERIAL NUMBER | 6028<br>1211 | 8012<br>7617 | 7664<br>801 |

On page 3, up top, will go the month and year covered by the form.

DAILY CONDITION FOR MONTH OF JULY '61



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**SOUND EQUIPMENT, RADIO, DIRECTION FINDING**
**RADAR, CARRIER, RADIOSONDE AND TELEVISION**
*(AR 750-625)*

| EQUIPMENT NOMENCLATURE | | | |
|---|---|---|---|
| AN/GRC-4 | RT-66/GRC | AM-65/GRC | PP-109/GRC |
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| | 1211 | 7617 | 801 |

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DAILY CONDITION FOR MONTH OF JULY '61

These few entries are the first marks needed—usually handled by your unit repairman before the form goes into action. He'll also line out those items that don't apply.

Let's skip the rest of page 1 for the moment.

Which brings us to the daily checks on page 2. These are simple enough, but important enough to demand day-by-day attention.

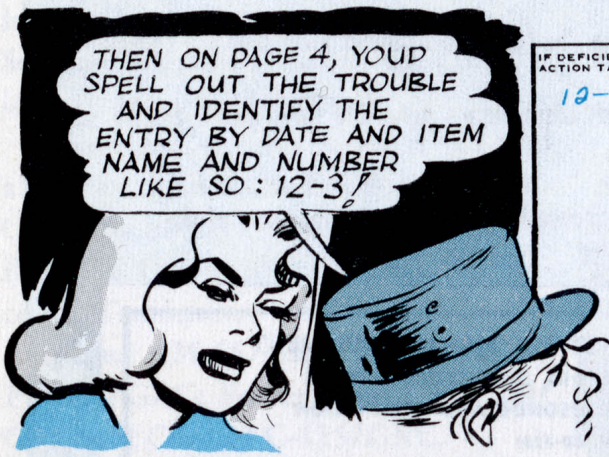
Using the legend, you check off items 1 through 4 in the appropriate blocks. If all is well, you'll check it so: ✓ If an adjustment, repair or replacement is needed, you'll mark an X in that block.

When you complete your daily check, you initial for it in the appropriate slot for that day of the month on the daily calendar—top of page 3.

LEGEND for marking conditions:
Satisfactory, ✓.
Adjustment, Repair or Replacement required, X.
Defect corrected, (X).

| NO. | ITEM — DAILY |
|---|---|
| 1. | COMPLETENESS AND GENERAL CONDITION OF EQUIPMENT. (Transc carrying cases, wire, cables, microphones, tubes, spare parts, technical m |
| 2. | CLEAN DIRT AND MOISTURE FROM ANTENNA, MICRO-PHONES, HEADSETS, KEYS, JACKS, PLUGS, COMPONENT PANELS. |
| 3. | INSPECT CONTROLS FOR NORMAL OPERATION. TAP CONTROLS LIGHTLY FOR EVIDENCE OF CUT-OUT FROM LOOSE CONTACTS. |
| 4. | CHECK FOR NORMAL OPERATION OF EQUIPMENT. BE ALERT FOR UNUSUAL OPERATION OR CONDITION. |

But let's say that on the 12th of the month you found that the volume control knob on the RT-66 was cutting out occasionally. Sorta hitting and missing. Then you'd put an X in the space for item 3, showing that things were not right.




IF DEFICIENCIES NOTED ARE NOT CORRECTED DURING THE INSPECTION, INDICATE ACTION TAKEN FOR CORRECTION.

12-3 - Volume control knob on RT-66/GRC intermittent. Cuts out occasionally. F.V. 13 July 61

FOLD

When your 2nd echelon mechanic corrects the trouble, he'll initial the entry on page 4—and then you circle the X on page 3 to show the condition was corrected.

If you find something that needs correcting . . . and can correct it yourself . . . (like cleaning the unit or locating a missing spare part) then you X the proper space, circle it to show it was corrected, and then note the details on page 4 and initial them.

If a trouble spot does not keep your equipment from performing, but cannot be corrected right away, then carry your X on to the following day (or days) until the condition is corrected.

Right there at your elbow, of course, is the TM for the equipment being checked. That should be SOP. And it should be open to the chapter on "Preventive Maintenance Services".

These few entries are the first marks needed—usually handled by your unit repairman before the form goes into action. He'll also line out those items that don't apply.

Let's skip the rest of page 1 for the moment.

Which brings us to the daily checks on page 2. These are simple enough, but important enough to demand day-by-day attention.

Using the legend, you check off items 1 through 4 in the appropriate blocks. If all is well, you'll check it so: ✓ If an adjustment, repair or replacement is needed, you'll mark an X in that block.

When you complete your daily check, you initial for it in the appropriate slot for that day of the month on the daily calendar—top of page 3.

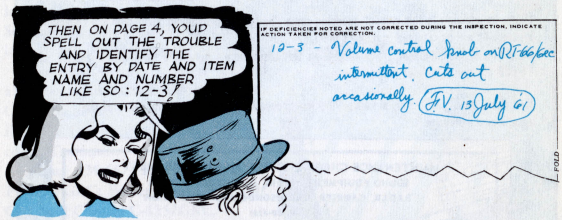
LEGEND for marking conditions:
Satisfactory, ✓.
Adjustment, Repair or Replacement required, X.
Defect corrected, (X).

DAILY

| NO. | ITEM |
|---|---|
| 1. | COMPLETENESS AND GENERAL CONDITION OF EQUIPMENT. (Items carrying cases, wire, cables, microphone, tubes, spare parts, technical |
| 2. | CLEAN DIRT AND MOISTURE FROM ANTENNA, MICRO-PHONES, HEADSETS, KEYS, JACKS, PLUGS, COMPONENT PANELS. |
| 3. | INSPECT CONTROLS FOR NORMAL OPERATION. TAP CONTROLS LIGHTLY FOR EVIDENCE OF CUT-OUT FROM LOOSE CONTACTS. |
| 4. | CHECK FOR NORMAL OPERATION OF EQUIPMENT. BE ALERT FOR UNUSUAL OPERATION OR CONDITION. |

DAILY CONDITION FOR MONTH OF JULY 1961

But let's say that on the 12th of the month you found that the volume control knob on the RT-66 was cutting out occasionally. Sorta hitting and missing. Then you'd put an X in the space for item 3, showing that things were not right.

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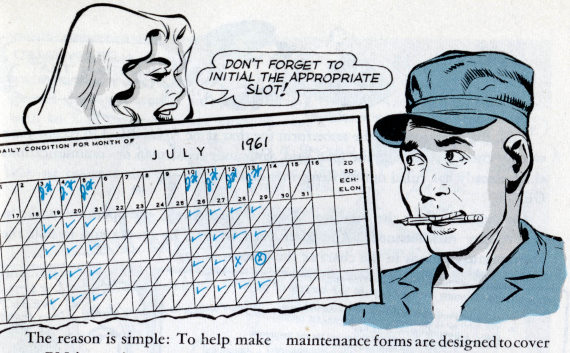
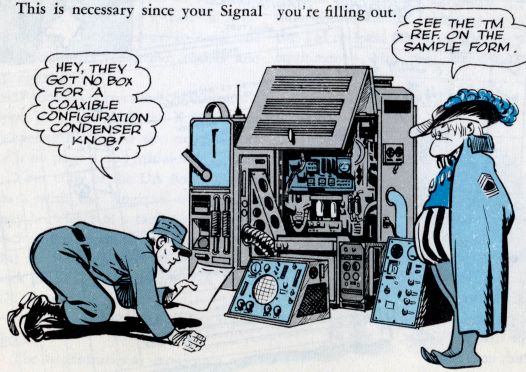


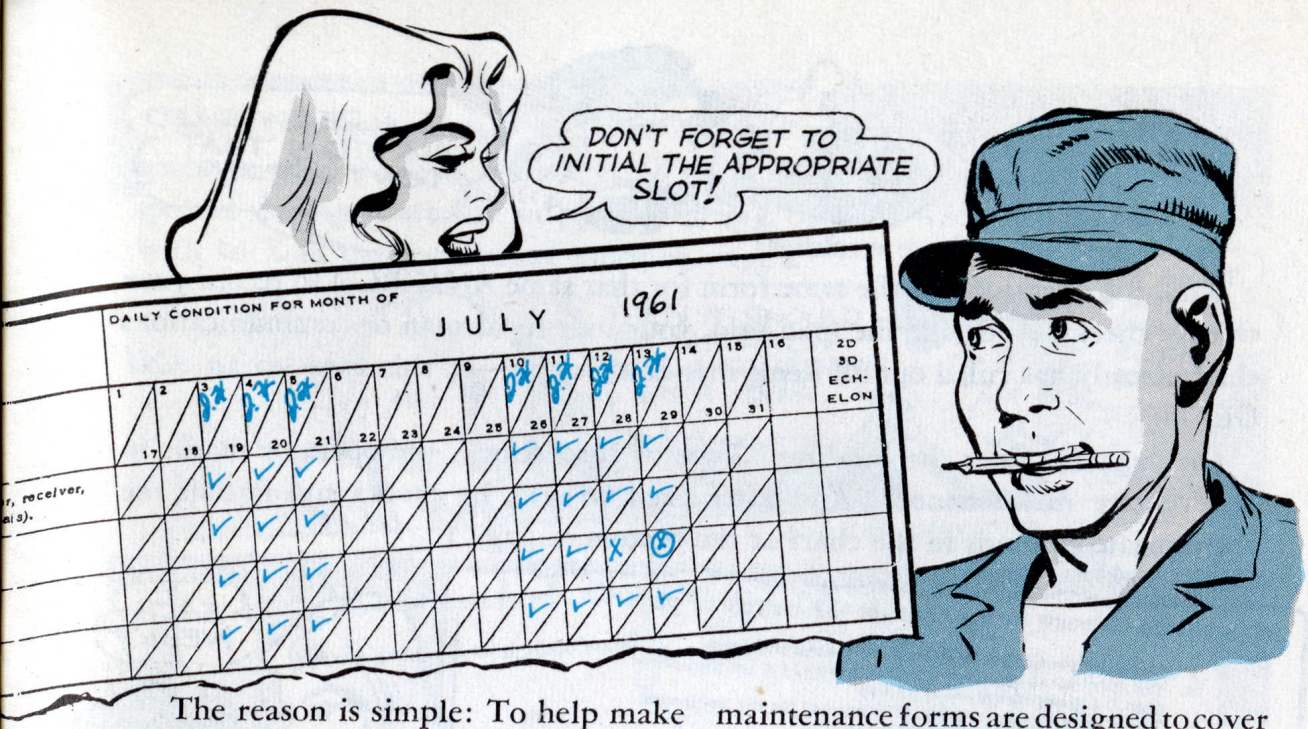

The reason is simple: To help make your PM inspection complete.

Written in the Item blocks on the sample preventive maintenance form in your TM are references to certain paragraphs in the chapter on preventive maintenance services. Those paragraphs generally pin down the specific things to check for that particular item.

This is necessary since your Signal maintenance forms are designed to cover a number of equipments within a general category — and therefore can't cover every exact item on every piece of equipment.

These paragraph references will help fill in the details and will go hand in hand with the various items to be checked on the maintenance form you're filling out.



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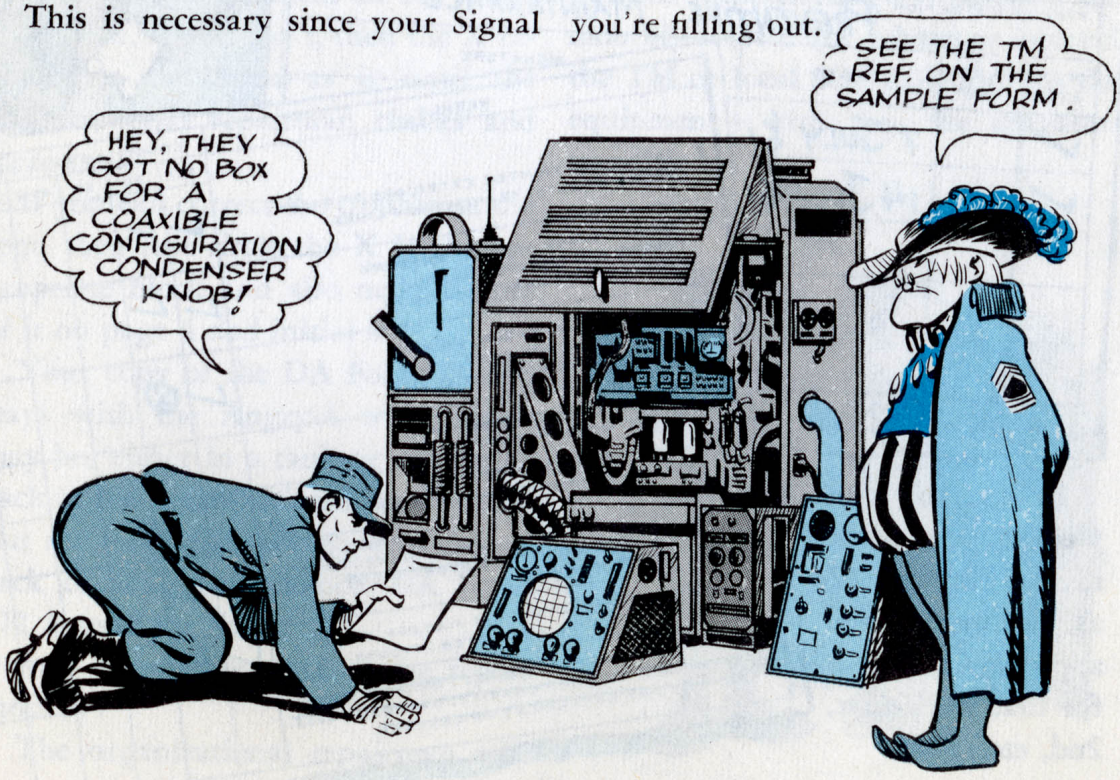


Now, how about those weeklies?

You, the operator, use the same form for that same AN/GRC-4 to record your weekly checks. And, like the man said, your unit repairman or communications chief already has ruled out all items that don't apply—in this case—to an AN/GRC-4.

On page 1, under the heading "Type of Inspection", the operator marks in "preventive maintenance" And after each weekly, he checks and initials the appropriate columns in the chart at the bottom of page 1.

appropriate columns in the chart at the bottom of page 1.

1. For detailed Preventive Maintenance instructions see:
   a. The Technical Manual *(in TM 11 series)* for the equipment. *(See DA Pamphlet Number 310-4)*
   b. The Supply Bulletin *(SB 11-100 series)* for the equipment. *(See DA Pamphlet Number 310-4)*
   c. The Department of the Army Lubrication Order. *(See DA Pamphlet Number 310-4)*

2. The following action will be taken by either the Communications Officer/ Chief for 1st echelon, or the Inspector for higher echelon:
   a. Enter Equipment Nomenclature and Serial Number.
   b. Strike out items that do not apply to the equipment.

3. Operator/Inspector will enter in the columns entitled CONDITION, on the proper line, a notation regarding the condition, using symbols specified under LEGEND.

4. After operator completes each daily inspection he will initial over the appropriate dates under "Daily Condition for Month", then return form to his supervisor

FOLD

TYPE OF INSPECTION PREVENTIVE MAINTENANCE

| OPERATOR | 2/3 ECHELON | DATE |
|---|---|---|
| ✓ | | 7 JULY '61 |
| ✓ | | 14 JULY '61 |
| | | |
| | | |
| | | |

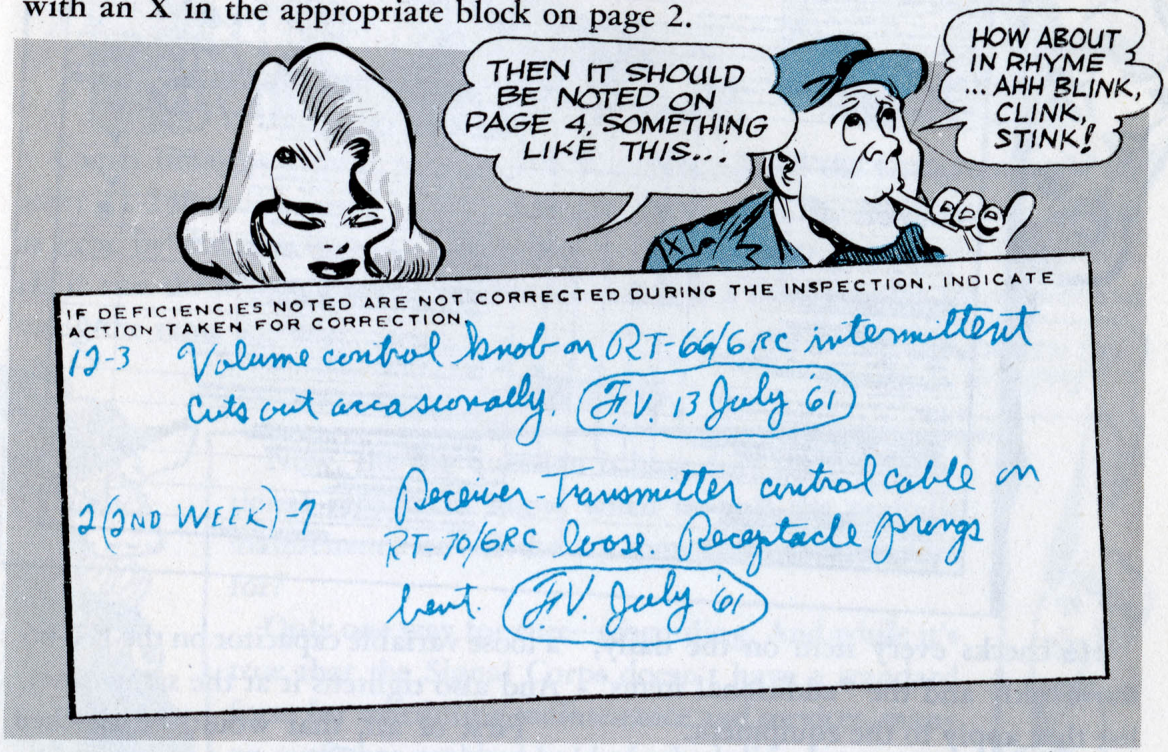
DA FORM 1 MAY 57 11-238

SIGNATURE

| WEEKLY | CONDITION EACH WEEK 1ST | 2D | 3D | 4TH | 5TH | 2D 3D ECH |
|---|---|---|---|---|---|---|
| 5. CLEAN AND TIGHTEN EXTERIORS OF CASES, RACKS, MOUNTS, TRANSMISSION LINES. | ✓ | ✓ | | | | |
| 6. INSPECT CASES, MOUNTS, ANTENNA TOWERS AND EXPOSED METAL SURFACES FOR RUST, CORROSION. | ✓ | ✓ | | | | |
| 7. INSPECT CORDS, CABLE, WIRE, SHOCK MOUNTS FOR CUTS, KINKS, BREAKS, FRAYING, UNDUE STRAIN. | ✓ | ⊗ | | | | |
| 8. CHECK ANTENNA GUY WIRES FOR PROPER TENSION OR DAMAGE. | | | | | | |
| 9. INSPECT CANVAS AND LEATHER ITEMS FOR MILDEW, TEARS, FRAYING. | | | | | | |
| 10. INSPECT ACCESSIBLE ITEMS FOR LOOSENESS: SWITCHES, KNOBS, JACKS, CONNECTORS, RELAYS, TRANSFORMERS, MOTORS, PILOT LIGHTS, BLOWERS, ETC. | ✓ | ✓ | | | | |
| 11. CLEAN AND/OR INSPECT AIR FILTERS, BRASS NAME PLATES, DIAL AND METER WINDOWS. | ✓ | ✓ | | | | |
| 12. INSPECT STORAGE BATTERIES FOR DIRT, LOOSE TERMINALS, SPECIFIC GRAVITY, DAMAGED CASES. INSPECT DRY BATTERIES FOR LEAKAGE. | | | | | | |

In pulling the weekly, you check items 5 through 12 as required in the appropriate column for that week (1st, 2nd, etc.).

And again, any adjustment, repair or replacement will be noted in the blank space on page 4. Thus, a loose REC-TR Control Cable on the RT-70/GRC—spotted during a weekly inspection during the 2nd week—would be checked with an X in the appropriate block on page 2.



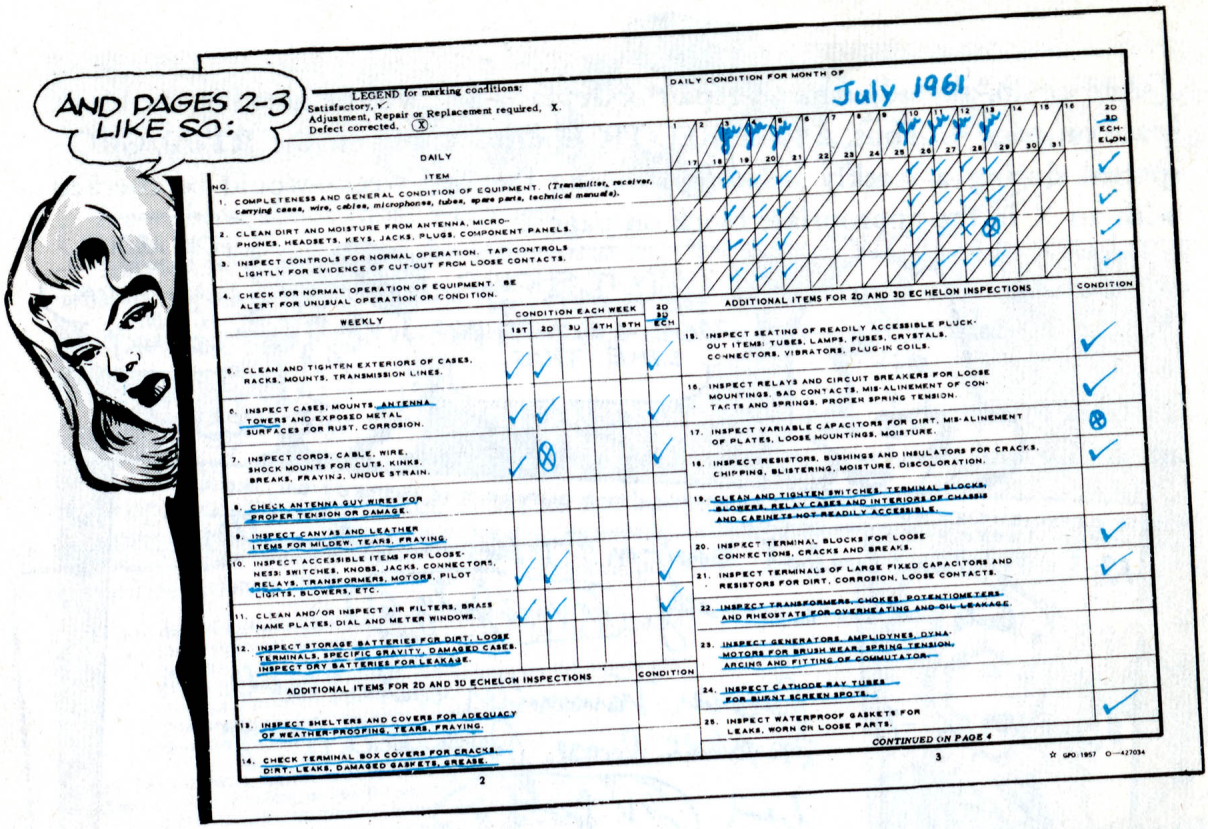

When it comes to trouble spots, of course, you correct them on the spot—if you can. If you can't, then the X remains on the form—as is—until the organizational repairman checks and corrects it.

If you can correct the trouble on the spot, then just circle the X in the appropriate block and also make a note of it on page 4 and initial it.

Your copy of the DA Form 11-238 stays with the Angry-4 wherever it may be, either in a tank or vehicle or back at the organizational repair shop. But the form does not go with the set back to field maintenance. DA Form 811 is used for that.

And meanwhile, back at the repair shop. . . .

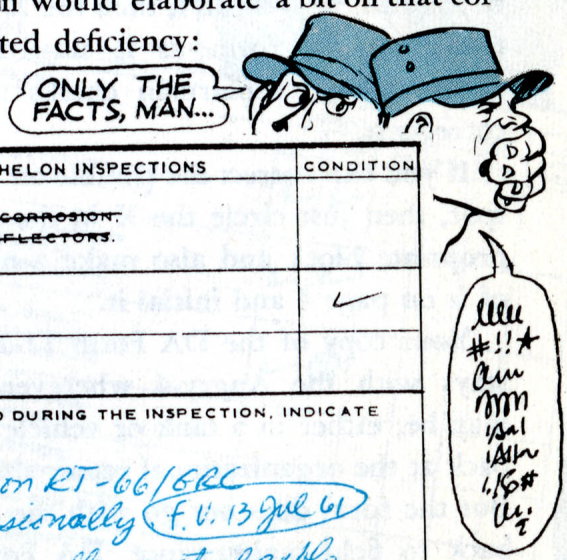
The organizational repairman will use the operator's record of this set to pull his inspections. He'll perform the monthly service (or whatever interval the TM or local SOP calls for) on the equipment — with you, the operator, standing by.




He checks every item on the daily, the weekly and the "additional items" list that apply to the equipment.

Each point will be checked in the 2nd echelon "condition" column—and a note recorded on page 4. During a monthly, pulled on the 21st of the month, assume that the repairman spots a loose variable capacitor on the RT-66. And also tightens it at the same time.

First of all, that would be checked with a circled (X) in the block opposite item 17. Flipping to page 4, the repairman would elaborate a bit on that corrected deficiency:

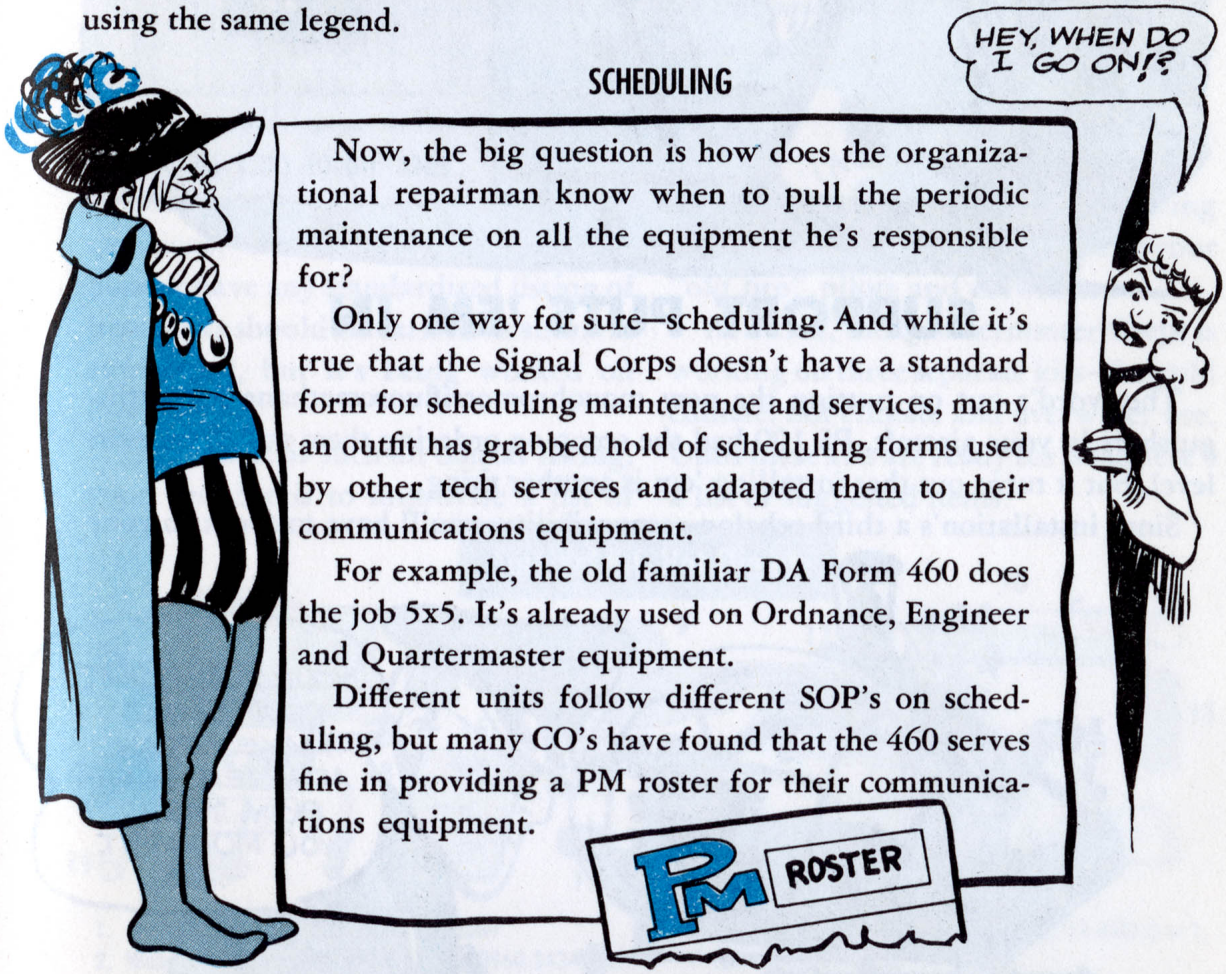



| ADDITIONAL ITEMS FOR 2D AND 3D ECHELON INSPECTIONS | CONDITION |
|---|---|
| 26. ~~INSPECT ANTENNA FOR ECCENTRICITIES, CORROSION, LOOSE FIT, DAMAGED INSULATORS AND REFLECTORS.~~ | |
| 27. CHECK FOR NORMAL OPERATION. | ✓ |
| 28. ~~BEFORE SHIPPING OR STORING, REMOVE BATTERIES.~~ | |

IF DEFICIENCIES NOTED ARE NOT CORRECTED DURING THE INSPECTION, INDICATE ACTION TAKEN FOR CORRECTION.

12-3 Volumn control knot-on RT-66/GRC intermittent. Cuts out occasionally (F.V. 13 Jul 61)
2(2nd week) - 7 Receiver Transmitter control cable on RT-70/GRC loose, Receptacle prongs bent (F.V. 14 Jul 61)
20.17 Variable capacitor (C-101A) on the RT-66 Loose. Tightened same (F.V.)

Comes time for a third echelon (CMI) inspection of the equipment and another 11-238 will be used by the inspector. He'll have the maintenance records as kept by the operator and repairman for his reference during the inspection. He'll run through all items—indicating that it is a third echelon inspection and using the same legend.




## SCHEDULING

Now, the big question is how does the organizational repairman know when to pull the periodic maintenance on all the equipment he's responsible for?

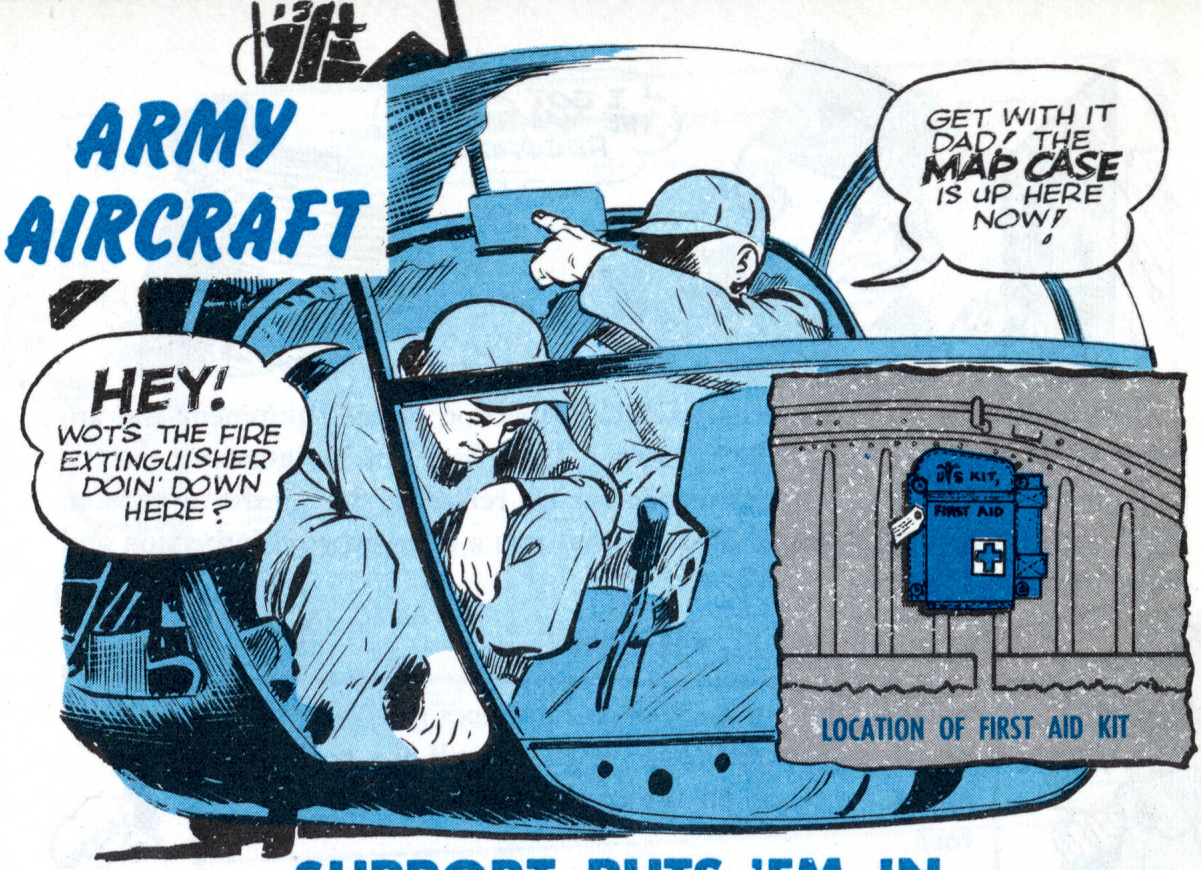
Only one way for sure—scheduling. And while it's true that the Signal Corps doesn't have a standard form for scheduling maintenance and services, many an outfit has grabbed hold of scheduling forms used by other tech services and adapted them to their communications equipment.

For example, the old familiar DA Form 460 does the job 5x5. It's already used on Ordnance, Engineer and Quartermaster equipment.

Different units follow different SOP's on scheduling, but many CO's have found that the 460 serves fine in providing a PM roster for their communications equipment.

It can be adapted to schedule maintenance on as many as 27 individual components—staggered over a full month. A unit repairman can schedule a certain number of monthly checks on different pieces of gear for each week—or at whatever interval he chooses.

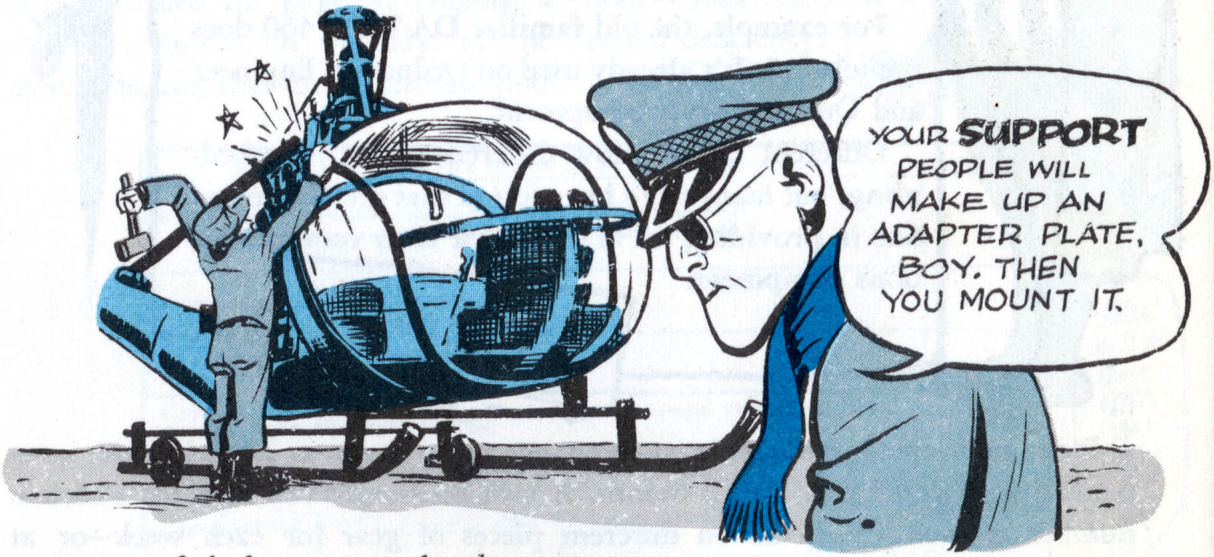
Whatever scheduling form a unit picks to adopt or adapt depends always on what local procedure allows. If an organization's CO says "affirmative," then charge ahead.




## SUPPORT PUTS 'EM IN

The word's out on putting the new monobromotrifluoromethane fire extinguishers in your aircraft. PS 100 had the scoop on ordering them at 2nd echelon level, but it turns out that installing 'em is another thing.

Since installation's a third echelon responsibility, you'll have to speak to your




support outfit before you go ahead on your own.

Seems the main stumbling block is an adapter plate that has to be made by your support people before the new $CF_3Br$ can be mounted in place of the old A-20 extinguisher. So no bailing wire fixes, please.

*Dear Windy,*

*The new AR 95-1, para 28, says we have to have emergency survival equipment on all extended flights over water, desert, arctic or jungle areas. A lot of our flying in this area is over either water or desert.*

*So the question is, where and how do I get this equipment? What FSN do I use? How much does it cost? Also, what publication can I refer to explaining how much equipment is needed for each passenger?*

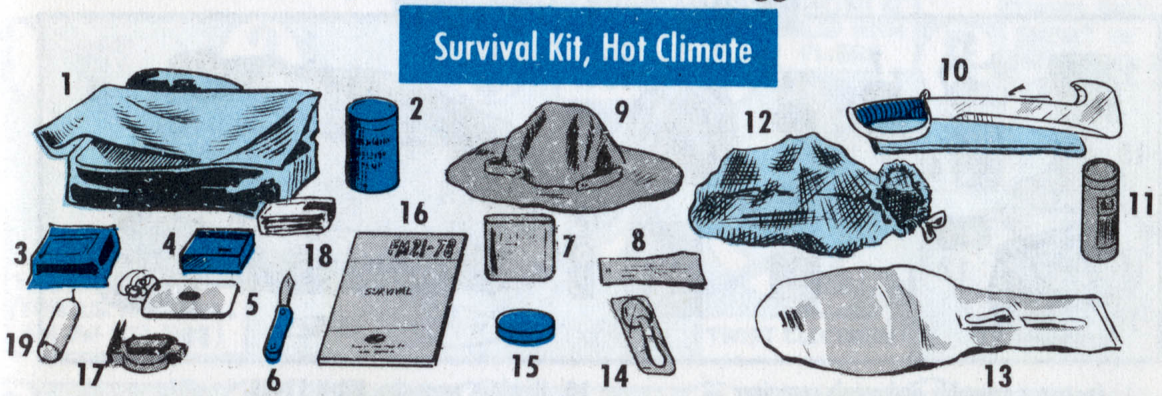
*Capt H. K. M.*

Dear Captain H. K. M.,

There's just one answer to all your questions, Sir. Improvise! The Army doesn't have any standardized listing of items that should be carried as survival equipment, but it's being worked on now.

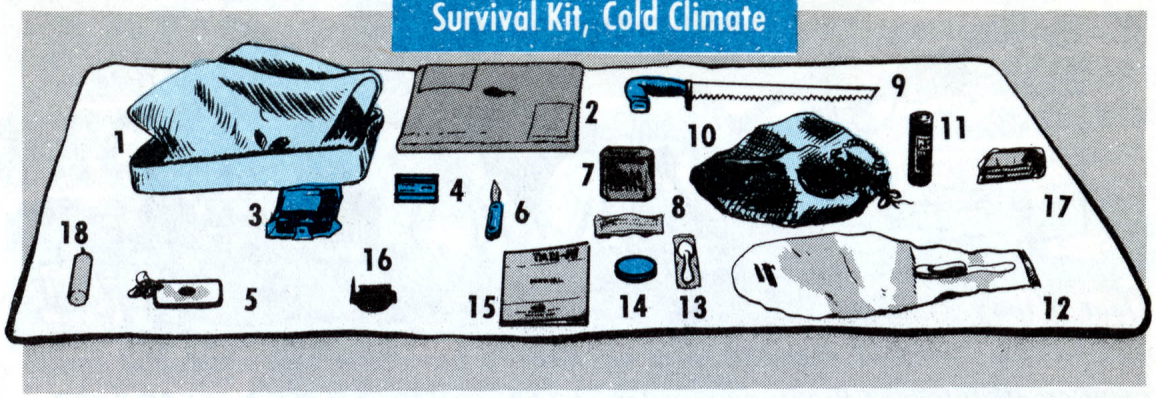
Until there is such an official listing, your best bet is to improvise a list of survival gear, based on the following list or the advice and experience of your "old pro" pilots and crewmen.

As a clue, the Quartermaster Corps is working on three separate kits—for cold climate, hot climate and overwater use. Until these kits are ready for issue here's a list of suggested items:




1. Container assembly and pouch, container
2. Water, emergency, MIL-W-15117, FSN 8960-243-2103
3. Kit, first aid, FSN 6545-299-8316
4. Tabs, fire-starting
5. Mirror, emergency, signal, metal, Victor M500 or equal
6. Jackknife, utility
7. Food packet, survival, all-purpose
8. Fuel, ration heating, individual, MIL-F-10805 (Type II), FSN 9110-263-9825
9. Hat, emergency, reversible (sun), FSN 8415-270-0228
10. Machete, emergency, survival
11. Signal, distress, day and night, AN-MK-13-MOD-0 or 1, FSN 1370-309-5028
12. Headnet, mosquito, MIL-H-11489, FSN 8415-261-6630
13. Container, drinking water (plastic), (Size A), MIL-B-8571
14. Spoon, metallic
15. Ointment, sun, protective, metal can, MIL-S-11262
16. FM 21-76, W/changes 1, SURVIVAL
17. Compass, lensatic, MIL-C-10436, FSN 6605-283-0346
18. Matches
19. Candle, wax, plumber's

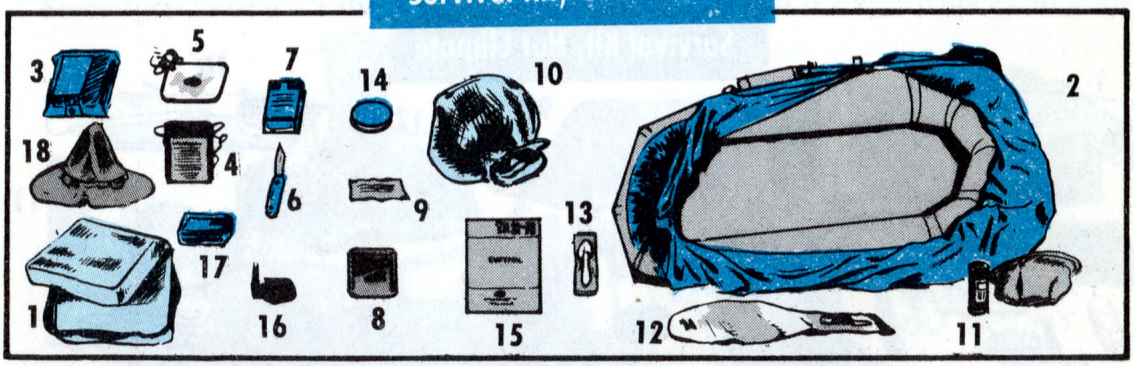
## Survival Kit, Cold Climate




1. Container assembly and pouch, container
2. Bag, sleeping, vacuum packed
3. Kit, first aid, FSN 6545-299-8316
4. Tabs, fire-starting
5. Mirror, emergency, signal, metal, Victor M500 or equal
6. Jackknife, utility
7. Food packet, survival, all-purpose
8. Fuel, ration heating, individual, MIL-F-10805 (Type II), FSN 9110-263-9825
9. Saw-knife-shovel assembly (shovel blade not shown), FSN 5110-212-1560
10. Headnet, mosquito, MIL-H-11489, FSN 8415-261-6630
11. Signal, distress, day and night, AN-MK-13-MOD-0 or 1, FSN 1370-309-5028
12. Container, drinking water, plastic, (Size A), MIL-B-8571
13. Spoon, non-metallic, MIL-S-676
14. Ointment, sun, protective, metal can, MIL-S-11262
15. FM 21-76, W/changes 1, SURVIVAL
16. Compass, lensatic, MIL-C-10436, FSN 6605-283-0346
17. Matches
18. Candle, wax, plumber's

Also, some of the items listed here might sound a little unavailable. But don't forget that these suggested kits don't exist in the supply system. It's up to you to locate items that match the descriptions or come close to 'em. Could be your local Quartermaster officer has some ideas.

## Survival Kit, Over Water




1. Container assembly and pouch, container
2. Life raft, one-man, PK-2, MIL-K-8664, FSN 4220-595-2509
3. Kit, first aid, FSN 6545-299-8316
4. Kit, distillation, desalter, MIL-D-5531
5. Mirror, emergency, signal, metal, Victor M500 or equal
6. Jackknife, utility
7. Fishing kit, survival, MIL-F-6218, FSN 7810-273-8596
8. Food packet, survival, all-purpose
9. Fuel, ration heating, individual, MIL-F-10805 (Type II), FSN 9110-263-9825
10. Headnet, mosquito, MIL-H-11489, FSN 8415-261-6630
11. Signal, distress, day and night, AN-MK-13-MOD-0 or 1, FSN 1370-309-5028
12. Container, drinking water, (Size A), MIL-B-8571
13. Spoon, non-metallic, MIL-S-676
14. Ointment, sun, protective, metal can, MIL-S-11262
15. FM 21-76, W/changes 1, SURVIVAL
16. Compass, lensatic, MIL-C-10436, FSN 6605-283-0346
17. Matches
18. Hat, emergency, reversible (sun), FSN 8415-270-0228

Windy Windsock

GRAB THOSE NUTS, SCREWS, AND BOLTS...

# WITH A DOWNHILL PULL

If "a thing of beauty is a joy forever . . ." then a job well done is a work of art. And that goes for any job . . . whether it's chopping a tree, casting a fly or removing an appendix.

Take lockwiring for example. When done right, lockwiring **looks** so simple a child could do it wearing boxing gloves. When done wrong, it looks like it was done by a kid with gloves. The difference is know-how, experience and pride in a job well done.

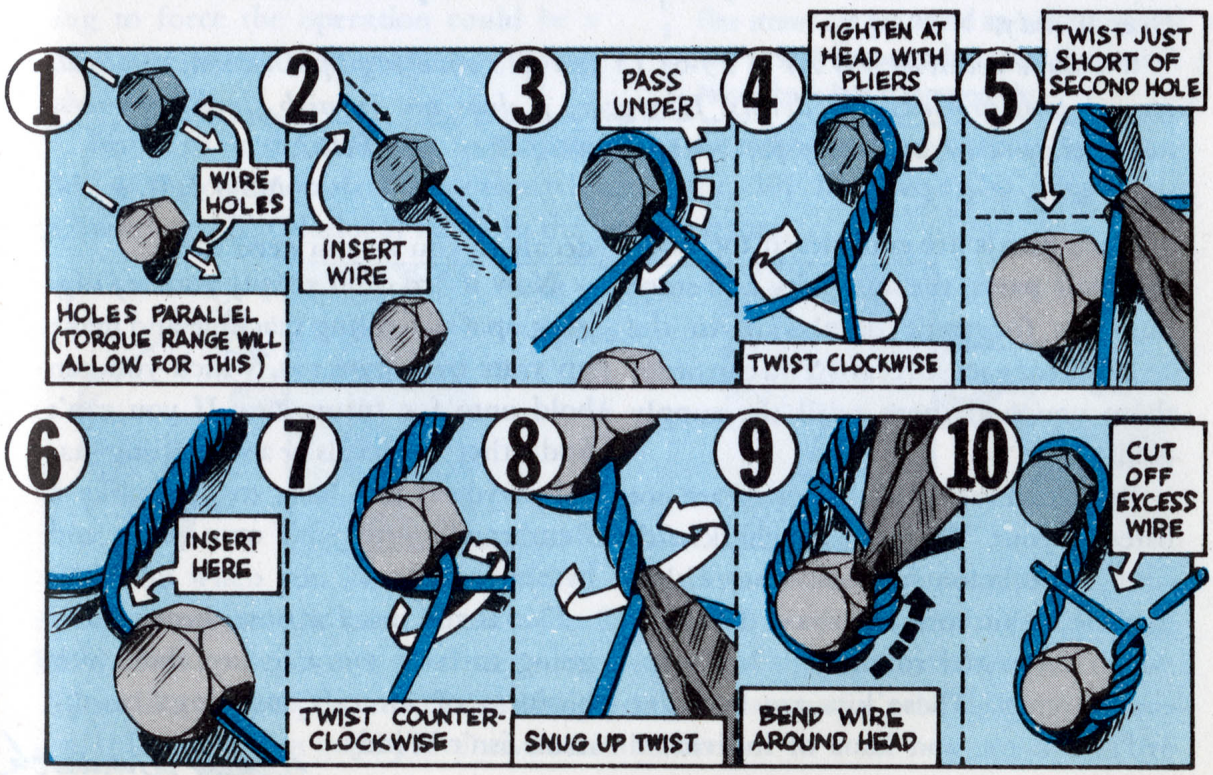
The exact wiring procedure you use depends on the job that has to be done, but there're some points that apply in almost all cases. TM 1-1-1A-8, "Aircraft Structural Hardware," gives you a good run down on general lockwiring.

For example, it tells you your lockwire should be about three-fourths the diameter of the hole in the fastener. And, of course, you always apply the wire so that it tends to tighten the fastener—not loosen it.

You want to start out by having the wire holes in your fasteners parallel. If you can't do this without disturbing the torque setting, then try other fasteners until they will line up. You never sacrifice the torque for the sake of the wiring.

## BY THE NUMBERS

Here's an example of how a real pro would lock up these capscrews:



# SIOUX ENGINE SAVER

*Dear Windy,*

*Sometimes when we've been plagued with low oil pressure troubles in the 0-335 engine for the Sioux (H-13), we've wondered if maybe the by-pass valve seat in the oil filter (P/N 02S0711-15) is too tight. Could that be the trouble?*

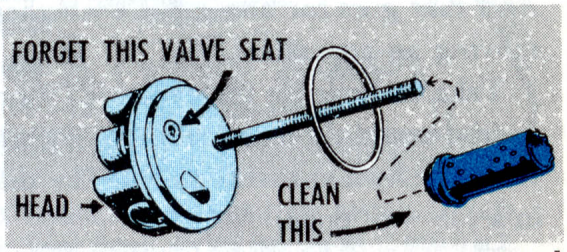
*SP5 J. L. M.*

Dear Specialist J. L. M.,

Might be a trouble but it's sure not the trouble. When you get to the place where that by-pass valve comes into play, you've already got troubles.

The only time that valve is called on is when the filter won't pass the oil under normal pressure. Then, and only then, will it open up and let oil flow through, just so you don't have a completely oil-starved engine.

The first and best step is to clean the filter—but don't stop there. One cleaning of the filter isn't going to be the answer if you've got glop in your system. It may take a couple-or-three filter cleanings right quick-like, with some good cleaning of the lines, to clear up your system.




Tinkering with that valve seat setting is not for you. That setting is not only a measured one—it has to be geared to a PSI-relationship, and that's the kind of fiddling that's to be done only by the guys with the test equipment to back it up.

Windy Windsock

# DECALS ARE PARTS, TOO

*Dear Windy,*

*We have received TB AVN 23-61 (5 Jan 61) covering application, removal, etc. of pressure-sensitive decals. However, it does not furnish stock numbers, nomenclature or authority for requisitioning. Can you help?*

*MSgt J. V. S., Jr.*

Dear MSgt J. V. S., Jr.,

Since decals are considered the same as repair parts, the authority and stock numbers for some decals are in the —20P's for each aircraft. You can order those you find there until the supply is all gone.

But when the decals you need are not listed in your "P" manuals, check with your 3rd echelon support. They either have or are authorized to have decal kits which are listed in their —34P's for each aircraft. These kits are both for 3rd's own use and issue of individual decals to you as you need them.

Now if 3rd can't supply you, try digging up a stencilling machine and make up your own patterns, which you can hold onto for future use. If you can't find either the decals or a stencilling machine, you'll just have to make like a Rembrandt with your own paint and brush.

But that's just for now, because I'm going to have more to say about this business of aircraft markings or my name isn't Windy.

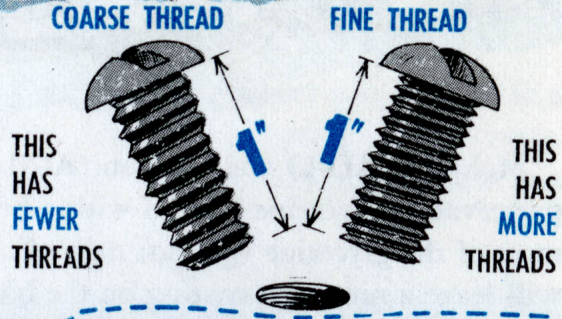
Windy Windsock

## MATCH THE THREADS OR... STRIP 'EM NOT

Meeting an 0500 roll call with a khaki shirt tucked into a pair of fatigue pants will get you in less trouble than trying to fit a coarse thread into a fine thread opening . . . or vice versa.

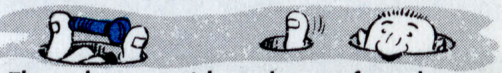
Some types try to save time replacing fasteners. They don't bother to double check, and usually end up feeling kind of silly when they're accused of stripping threads. With common hardware items—'specially those threaded ones—you've got to resist that temptation to make a beeline for the nearest parts bin or hardware kit—**check your aircraft's part list first.**

Suppose you pick up the wrong one by accident. You might even get that wrong thread started into a hole, but if you start forcing it you're going to strip those threads for sure. In fact, having to force the operation could be a clue that you're mixing threads. So try this for size—




Take a look at the hole. You've either got coarse or fine threads in there. Got to match hole and screw threads—coarse with coarse and fine with fine.

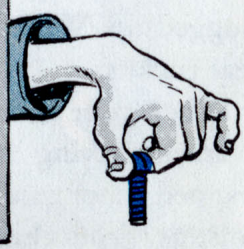
Next check the -20P for the right part number and details like length, diameter, and whether it's a fine—or coarse-thread item.



Then when you pick up the part from the supply bin you know what it should measure and what type threads it has to have. The size might be OK but double check those threads. Fine screws can get mixed up with coarse and vice versa. It happens when unused hardware's tossed back into a common bin.

Just to show the difference in threading for the same size screws here's the way a few of the common sizes do **not** match up. Your -20P lists 'em as NC (National Coarse) or NF (National Fine) in the nomenclature.

| Screw Dia | NC Threads per inch | NF Threads per inch |
|---|---|---|
| 1/4" | 20 | 28 |
| 3/8" | 16 | 24 |
| 1/2" | 13 | 20 |
| 3/4" | 10 | 16 |
| 1" | 8 | 14 |



See? So when you install that screw, bolt, nut, fastener, pin—anything with threads on—start the part in with the fingers and never use force. You should know after a turn or two whether or not you've got the right combination.

Just like the proper uniform can help you get that pass, it's the right combination that pays off in good prevehtive maintenance.

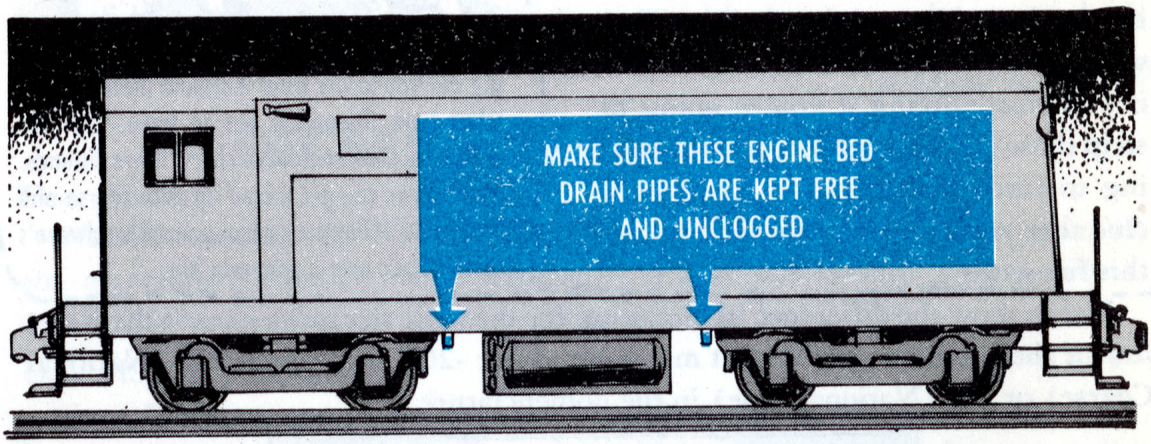
Mohawk (AO-1) and Caribou (AC-1) de-icer boots do not appreciate globs of preservative glycerine laid on with a brush. It goes on too heavy that way and most of the glycerine will just drip off. But glycerine wiped on with a clean rag will leave a nice even coating on the boots.

No glycerine for Seminole (L-23) boots, though. They're treated with special cement like the Seminole -2 says.

## PLEASE — NO WET BEDS

Just a minute, Casey.

Don't push the start button on your Fairbanks Morse Model H12-44 Diesel-Electric locomotive just yet. Could be your engine bed is all wet and just waiting to foul up your whole operation.




Seems the engine bed drain pipes on these switchers have a habit of getting clogged up. Which means that the water can't get out—setting the stage for a real ruckus.

When your brute is left standing on a track having a slight grade, the trapped water runs into the truck frame bolsters. From there it goes to the traction motors, soaking the armatures and coils. So when you start up, the soaked traction motors cause a "flashover"—which plays hob with the motors and the main generator.

The simple solution? That's right—you've got to make sure the engine bed drain pipes are kept free and unclogged.

Your best bet is to blow out the pipes with high-pressure air. But if there's no high air pressure around, then use a wire probe. Stick it well up into the piping and make sure you clear the way for free and easy drainage.

# TAKE A TIP

You're getting tipsy trying to find a cutting tip that will fit your cutting and welding torch (FSN 3433-294-6743). The tip won't fit the torch or the torch won't fit the tip.

Could be that you're mixing them instead of matching them—trying to fit a tip made by one manufacturer into a torch made by a different manufacturer.

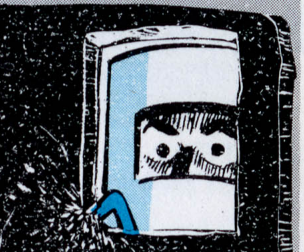
To make it easier for you to get the right tip for your torch, here's how you match them by manufacturers.

When you see a 3433 FSN it's Ordnance; 5120 are QM.

## LIST OF COMPONENTS, FSN's, MANUFACTURERS AND MFR's PART NUMBERS FOR 3433-294-6743 TORCH SET, CUTTING AND WELDING

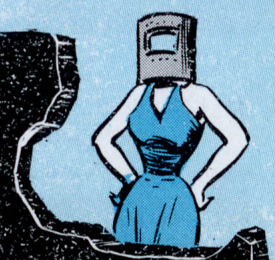
| SET FSN | Mfr's Set No. | Set Description |
|---|---|---|
| 3433-294-6743 | 14 | TORCH, OXY-ACETYLENE, MEDIUM DUTY WELDING AND CUTTING, W/WRENCH, CUTTING ATTACHMENT, AND TIPS: National Cylinder Gas Co. |

| PARTS FSN | Mfr's Part No. | Parts Description |
|---|---|---|
| 3433-373-1727 | 250-51 | TIP, OXYGEN ACETYLENE, CUTTING, drill size 51. |
| 3433-373-1730 | 250-56 | TIP, OXYGEN ACETYLENE, CUTTING, drill size 56. |
| 3433-373-1731 | 870-42 | TIP, OXYGEN ACETYLENE, WELDING, drill size 42. |
| 3433-373-1726 | 250-46 | TIP, OXYGEN ACETYLENE, CUTTING, drill size 46. |
| 3433-373-1733 | 870-50 | TIP, OXYGEN ACETYLENE, WELDING, drill size 50. |
| 3433-373-1734 | 870-53 | TIP, OXYGEN ACETYLENE, WELDING, drill size 53. |
| 3433-373-1737 | 870-58 | TIP, OXYGEN ACETYLENE, WELDING, drill size 58. |
| 3433-373-1739 | 870-62 | TIP, OXYGEN ACETYLENE WELDING, drill size 62. |
| 3433-391-1218 | 7810 | TORCH WRENCH, OXYGEN ACETYLENE. |
| 5120-277-2694 | — | WRENCH, OPEN END, FIXED, 15-deg angle, w/1-$\frac{1}{8}$x1-$\frac{3}{4}$ in. openings; Fed. Spec. GGG-W-636a, Type IV. |



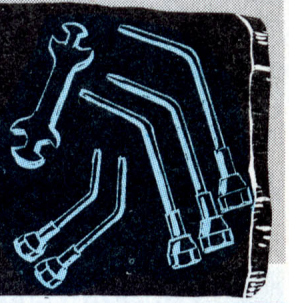
| SET FSN | Mfr's Set No. | Set Description |
|---|---|---|
| 3433-294-6743 | F1076 W/WG 6450B | TORCH, OXY-ACETYLENE, MEDIUM DUTY WELDING AND CUTTING, W/WRENCH, CUTTING ATTACHMENT AND TIPS: Smith Welding Equipment Co. |

| PARTS FSN | Mfr's Part No. | Parts Description |
|---|---|---|
| 3433-357-7222 | F-702 | SECTION, COPPER, BENT, w/nut, for tip No. B61. |
| 3433-357-7223 | F-706 | SECTION, COPPER, BENT, w/nut, for tip No. B63. |
| 3433-357-7224 | F-710 | SECTION, COPPER, BENT, w/nut, for tip No. B65. |
| 3433-357-7225 | F-714 | SECTION, COPPER, BENT, w/nut, for tip No. B67. |
| 3433-357-7226 | F-718 | SECTION, COPPER, BENT, w/nut, for tip No. B69. |
| 3433-357-7576 | LC1-4 | TIP, OXYGEN ACETYLENE, CUTTING, tip No. 1-4. |
| 3433-357-7578 | LC3-4 | TIP, OXYGEN ACETYLENE, CUTTING, tip No. 3-4. |
| 3433-357-7575 | LC5-6 | TIP, OXYGEN ACETYLENE, CUTTING, tip No. 5-6. |
| 3433-357-7651 | F-762 | TIP, OXYGEN ACETYLENE, WELDING, tip No. B-61 (for welding $\frac{1}{32}$ to $\frac{1}{16}$ in). |
| 3433-357-7652 | F-766 | TIP, OXYGEN ACETYLENE, WELDING, tip No. B-63 (for welding $\frac{1}{8}$ to $\frac{3}{16}$ in). |
| 3433-357-7653 | F-770 | TIP, OXYGEN ACETYLENE, WELDING, tip No. B-65 (for welding $\frac{1}{4}$ to $\frac{3}{8}$ in). |
| 3433-357-7654 | F-774 | TIP, OXYGEN ACETYLENE, WELDING, tip No. B-67 (for welding $\frac{1}{2}$ to $\frac{5}{8}$ in). |
| 3433-357-7655 | F-778 | TIP, OXYGEN ACETYLENE, WELDING, tip No. B-69 (for welding 1 in and over). |
| 5120-449-8179 | 28 | WRENCH, torch and regulator, oxy-acetylene; Air Reduction Sales Co. |



| SET FSN | Mfr's Set No. | Set Description |
|---|---|---|
| 3433-294-6743 | WC82 | TORCH, OXY-ACETYLENE, MEDIUM DUTY WELDING AND CUTTING, W/WRENCH, CUTTING ATTACHMENT AND TIPS: Victor Equipment Co. |

| PARTS FSN | Mfr's Part No. | Parts Description |
|---|---|---|
| 3433-373-1729 | 1-3-101 | TIP, OXYGEN ACETYLENE, CUTTING, drill size 54. |
| 3433-373-1728 | 2-3-101 | TIP, OXYGEN ACETYLENE, CUTTING, drill size 52. |
| 3433-373-1725 | 4-3-101 | TIP, OXYGEN ACETYLENE, CUTTING, drill size 45. |
| 3433-373-1740 | 0-13 | TIP, OXYGEN ACETYLENE, WELDING, drill size 65. |
| 3433-373-1738 | 1-13 | TIP, OXYGEN ACETYLENE, WELDING, drill size 60. |
| 3433-373-1736 | 2-13 | TIP, OXYGEN ACETYLENE, WELDING, drill size 56. |
| 3433-373-1735 | 3-13 | TIP, OXYGEN ACETYLENE, WELDING, drill size 53. |
| 3433-373-1732 | 5-13 | TIP, OXYGEN ACETYLENE, WELDING, drill size 43. |
| 3433-391-1221 | RT-20 | TORCH WRENCH, WELDING, 4-way. |



| SET FSN | Mfr's Set No. | Set Description |
|---|---|---|
| 3433-294-6743 | W17W/CW23 | TORCH OXY-ACETYLENE, MEDIUM DUTY WELDING AND CUTTING, W/WRENCH, CUTTING ATTACHMENT AND TIPS: Linde Air Products Co. |

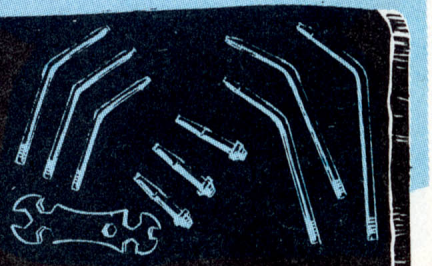
| PARTS FSN | Mfr's Part No. | Parts Description |
|---|---|---|
| 3433-357-7560 | 13-A-81 | TIP, OXYGEN ACETYLENE, CUTTING, tip No. 4. |
| 3433-357-7566 | 13-A-82 | TIP, OXYGEN ACETYLENE, CUTTING, tip No. 6. |
| 3433-357-7569 | 13-A-83 | TIP, OXYGEN ACETYLENE, CUTTING, tip No. 8. |
| 3433-357-7598 | 12-Z-41 | TIP, OXYGEN ACETYLENE, WELDING, tip No. 4. |
| 3433-357-7614 | 12-Z-44 | TIP, OXYGEN ACETYLENE, WELDING, tip No. 12. |
| 3433-357-7615 | 12-Z-46 | TIP, OXYGEN ACETYLENE, WELDING, tip No. 20. |
| 3433-357-7623 | 12-Z-48 | TIP, OXYGEN ACETYLENE, WELDING, tip No. 40. |
| 5120-449-8179 | 28 | WRENCH, torch and regulator, oxy-acetylene; Air Reduction Sales Co. |

| SET FSN | Mfr's Set No. | Set Description |
|---|---|---|
| 3433-294-6743 | A-900 B W/A | TORCH, OXY-ACETYLENE, MEDIUM DUTY WELDING AND CUTTING, W/WRENCH, CUTTING ATTACHMENT AND TIPS: Black Mfg. Co. |

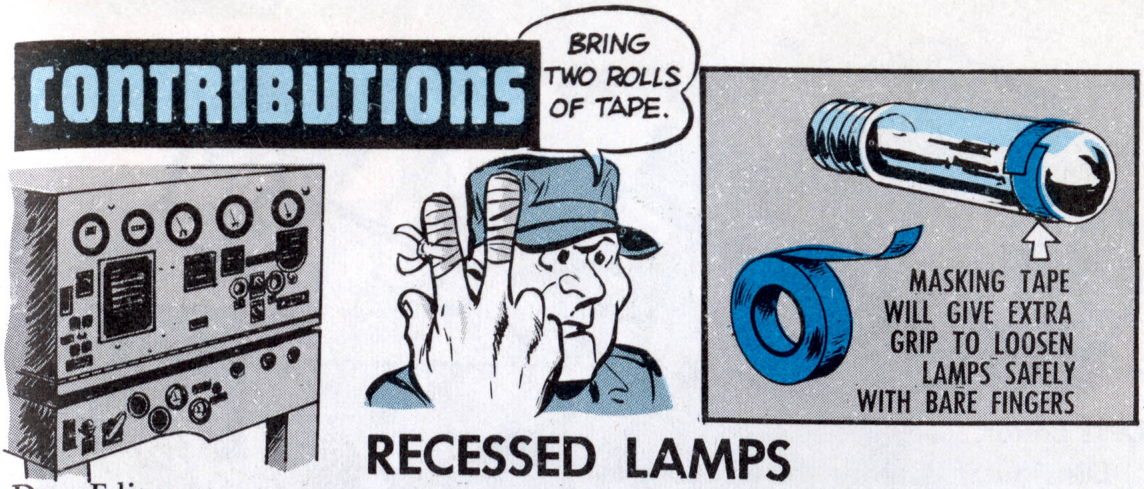
| PARTS FSN | Mfr's Part No. | Parts Description |
|---|---|---|
| 3433-357-7551 | HMS-CT-1 | TIP, OXYGEN ACETYLENE, CUTTING, tip No. 1.* |
| 3433-378-4342 | HMS-CT-2 | TIP, OXYGEN ACETYLENE, CUTTING, tip No. 2.* |
| 3433-357-7563 | HMS-CT-5 | TIP, OXYGEN ACETYLENE, CUTTING, tip No. 5.* |
| 3433-357-7590 | FX-2 | TIP, OXYGEN ACETYLENE, WELDING, tip No. 2.* |
| 3433-357-7596 | FX-3 | TIP, OXYGEN ACETYLENE, WELDING, tip No. 3.* |
| 3433-357-7601 | FX-4 | TIP, OXYGEN ACETYLENE, WELDING, tip No. 4.* |
| 3433-357-7607 | FX-5 | TIP, OXYGEN ACETYLENE, WELDING, tip No. 5* |
| 3433-357-7612 | FX-9 | TIP, OXYGEN ACETYLENE, WELDING, tip No. 9.* |
| 5120-449-8179 | 28 | WRENCH, Torch and regulator, oxy-acetylene, Air Reduction Sales Co. |
| | | *Mfg. by Alex. Milburn Co. |

| SET FSN | Mfr's Set No. | Set Description |
|---|---|---|
| 3433-294-6743 | 4EC W/C-4 | TORCH, OXY-ACETYLENE, MEDIUM DUTY WELDING AND CUTTING, W/WRENCH, CUTTING ATTACHMENT, AND TIPS: Dockson Corp. |

| PARTS FSN | Mfr's Part No. | Parts Description |
|---|---|---|
| 3433-378-4341 | No. 2 Style C | TIP, OXYGEN ACETYLENE, CUTTING. |
| 3433-357-7557 | No. 3 Style C | TIP, OXYGEN ACETYLENE, CUTTING. |
| 3433-378-4344 | No. 4 Style C | TIP, OXYGEN ACETYLENE, CUTTING. |
| 3433-357-7635 | 2E | TIP, OXYGEN ACETYLENE, WELDING. |
| 3433-357-7638 | 4E | TIP, OXYGEN ACETYLENE, WELDING. |
| 3433-357-7642 | 6E | TIP, OXYGEN ACETYLENE, WELDING. |
| 3433-357-7645 | 8E | TIP, OXYGEN ACETYLENE, WELDING. |
| 3433-357-7648 | 10E | TIP, OXYGEN ACETYLENE, WELDING. |
| 5120-449-8179 | 28 | WRENCH, torch and regulator, oxy-acetylene; Air Reduction Sales Co. |



# CONTRIBUTIONS




## RECESSED LAMPS

Dear Editor,

Here's a little trick that helps when you have to replace recessed lamps, like the synch lights on generator control boards.

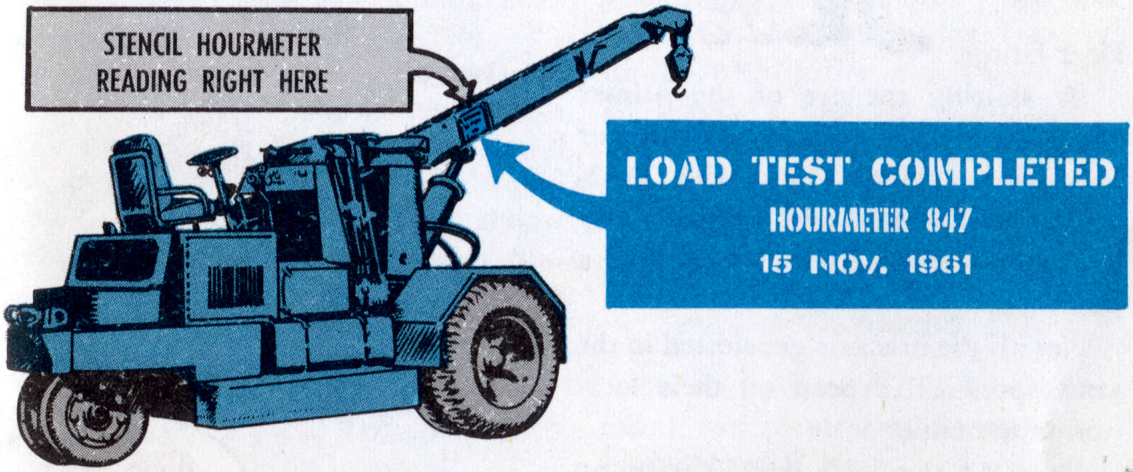
If the lamp won't turn with light finger pressure, don't force it. Forcing could break the bulb and gash your fingers.

Just put a little patch of masking tape over the end of the bulb. The tacky tape will give you enough extra grip to loosen lamps you couldn't budge with your bare fingers.

**A. N. Paladino**
**Tappan, N.Y.**

*(Ed Note—Good going. If there's no masking tape handy, bicycle tape or cellophane tape should do it.)*

## ADDED DATA



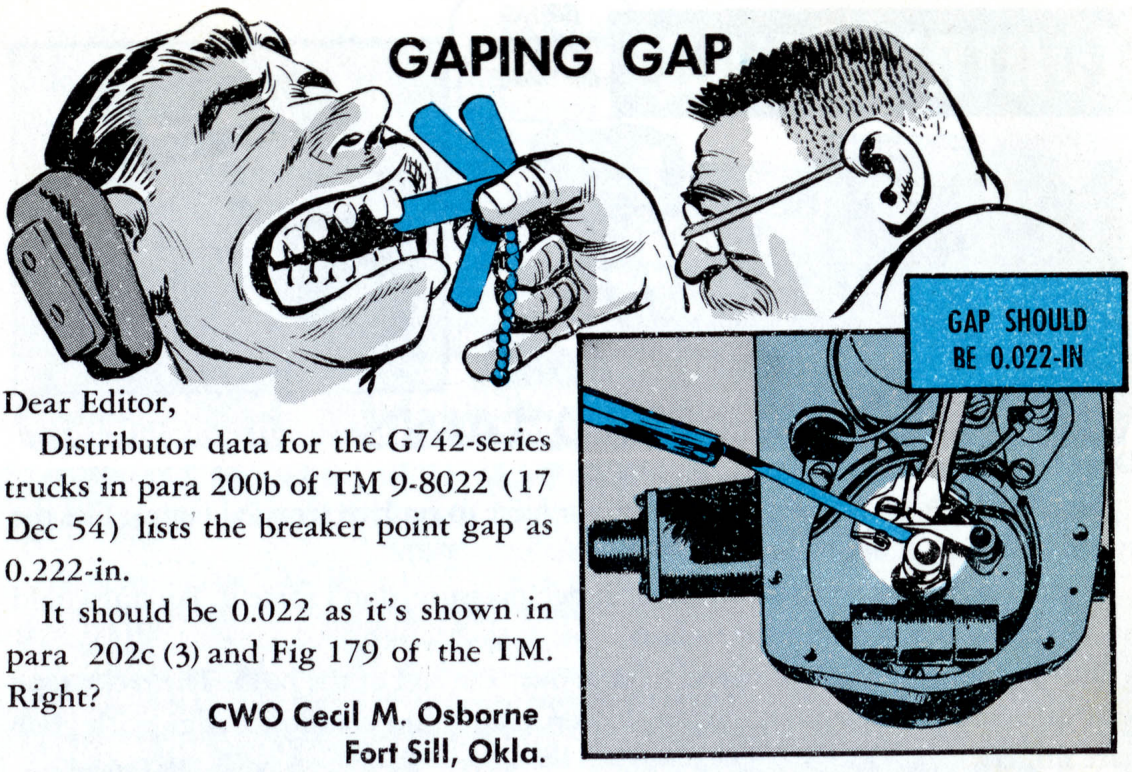

Dear Editor,

We figure that as long as we have to stencil the date on our NC-10 ammo-carrying crane every time it's load-tested anyway, we might just as well stencil on the hourmeter reading too.

This way, we can tell at a glance when the next load test's due, whether it's a 6-month or 500-hour test.

**Sgt. Lawrence A. Martin**
**Fort Lee, Va.**

## GAPING GAP




Dear Editor,

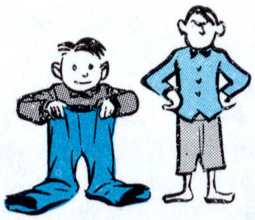
Distributor data for the G742-series trucks in para 200b of TM 9-8022 (17 Dec 54) lists the breaker point gap as 0.222-in.

It should be 0.022 as it's shown in para 202c (3) and Fig 179 of the TM. Right?

**CWO Cecil M. Osborne**
**Fort Sill, Okla.**

*(Ed Note—Right. And the input voltage in the same data table should be 24—not 241).*

## SLOT IT



Dear Editor,

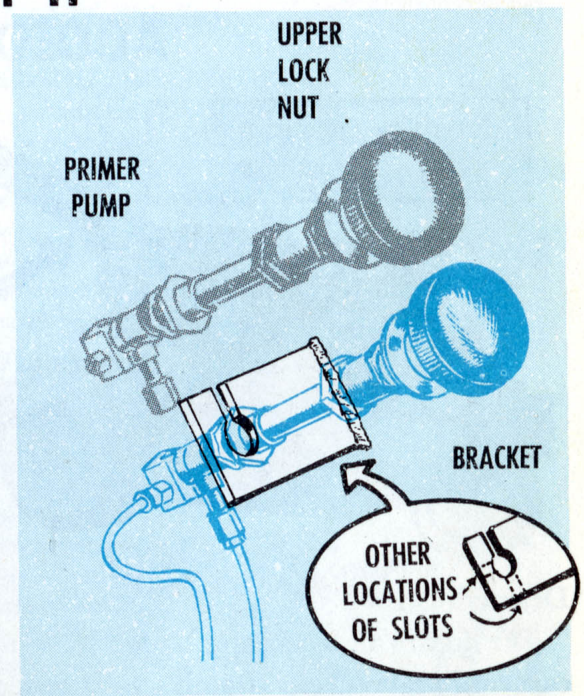
By slotting the eye of the primer pump holding bracket in most of our light tanks (M76, M56, M52, M42-series, M41-series, and M8 models) removing and replacing 'em is now a real snap.

Not all the brackets get slotted in the same spot—it'll depend on their location in the tank.

Once the slot job's done, the pump body can be taken off or put back on just by loosening up the upper lock-nut.

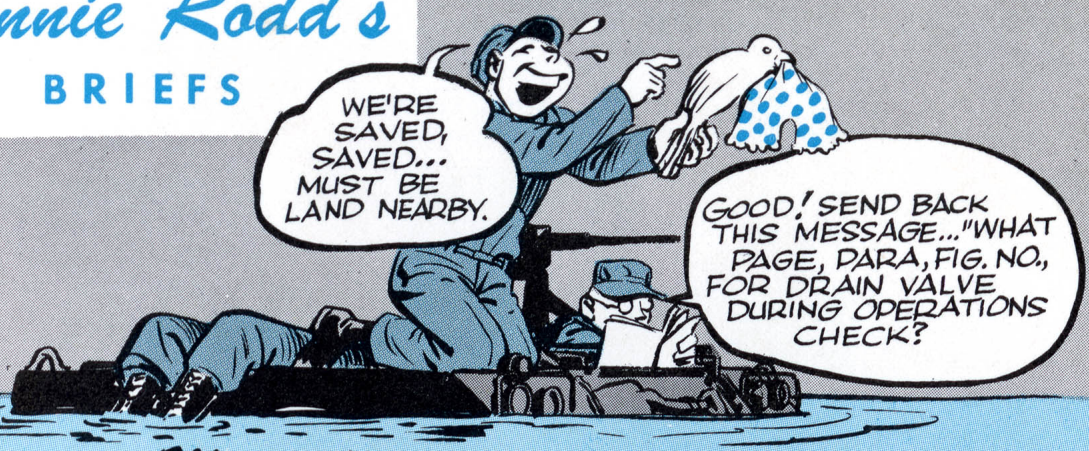
The parts above the upper lock-nut'll be saved from needless wear and tear—saves the time of taking it apart, too.

**Dayton B. Poe**
**Fort Knox, Ky.**




*(Ed Note—looks like you've simplified the job, but get your CO's permission before performing the surgery.)*

# Connie Rodd's BRIEFS




## Memo to Mig welders

Remember . . . the gun torch on your MIG (metal inert gas) welding set has a **maximum** current capacity of **200 amps.** So, take care . . . when you use your MIG set with the conventional 300-amp arc welder be real sure your amperage setting **does not exceed 200 amps.**

## Clean it

Don't you believe it—if anybody tells you the M14 rifle has a stellite barrel and so doesn't get worked on with bore cleaner. The barrel's not stellite — it's chrome plated — and you do use bore cleaner. 'Course . . . the latest scoop is that you only have to clean the barrel once after firing—instead of the old deal of three cleanings. The deal is that new and better propellent powders and primers in the ammo, plus the chromed bore, give the M14 barrel added life and protection.

## Stronger screen

She's waitin' for you. A stronger, sturdier blower exhaust protective screen for the bottom side of your receiver-transmitter RT-349/ARC-55. SB 11-515 (11 April 61) authorizes the new screen —which gives better protection to the exhaust motor rotor blades.

## Mistaken identity

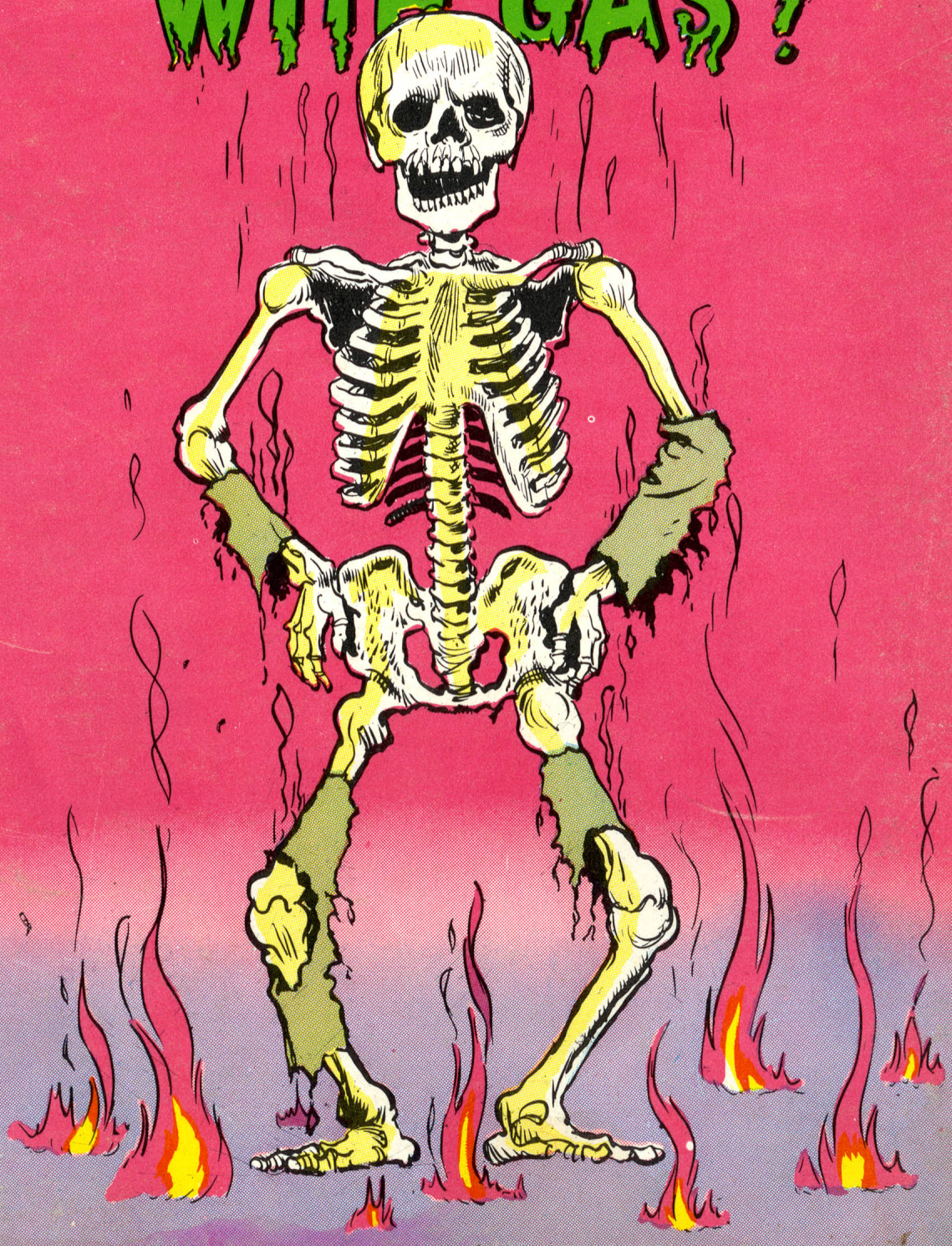
If the Engineer A plate on your new Consolidated Diesel 45KW 60 cycle Model 4070 generator reads FSN 6115-538-8774—better scratch the last seven digits. To keep your record honest, you want to change 'em to read FSN 6115-633-8327, like it says in SM 5-5-6100.

## M 103 tank dope

You can't play the right music if'n you read it off the wrong sheets. Likewise, you can't do a good job if you read the wrong TM and LO. The right TM and LO for the M103 120-mm gun tank is TM 9-2350-206-12 and LO 9-2350-206-10. The right ones for the M103A1 120-mm gun tank are TM 9-2350-214-10 and LO 9-2350-214-10. The "A1" on that tank does make a difference.

## Flamethrower tank

Do you have an M7A1-6 main armament, turret-mounted mechanized flamethrower? If so . . . check its USA number. Those with numbers 9B2928 through 9B2933 and 9B2935 through 9B2958 should have stowage boxes installed for the commander's and gunner's spare periscopes. MWO 3-1040-206-45/1 (22 Mar 61) (Urgent) gives the word on this.

**Would You Stake Your Life on the Condition of Your Equipment?**

# AWRIGHT, WHO'S BEEN CLEANIN' WITH GAS?